Alaris® Gateway Workstation

Technical Service Manual

CardinalHealth

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Cardinal Health, 1180 Rolle, Switzerland

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Contents

Chapter

1. General Information 4
2. Routine Maintenance 8
3. Troubleshooting 17
4. Circuit Descriptions 19
5. Spare Parts Replacement Procedures 22

Appendix

A. Electromagnetic Compatibility 51
B. Spare Parts Listing 56
C. Disposal 62
D. Service Contacts 64
E. Document History 66

Chapter 1

General Information

In this chapter

Introduction	5
General Precautions	6
Features of the Workstation	7

Introduction

The Alaris® Gateway Workstation (herein after referred to as "Workstation") has been designed as a modular system providing a communications gateway between the Alaris® Infusion Pump and any Patient Data Management System (PDMS), Patient Monitoring (PM) System or Clinical Information System (CIS) that requires access to the infusion data retained within the pump.

- Central management system for multiple Alaris® Infusion Pumps
- Medical Device Interface (MDI) – a unique mounting mechanism providing data communications and mains power to the Alaris® Infusion Pump
- Reduced cable clutter with the use of a single AC power inlet
- Simple to set up with adaptable modular design
- Efficient organisation of multiple infusion lines and configurations
- Battery back-up in the event of power supply interruption
- Optional high visibility beacon assists with the location of pumps in an alarm state
- Nurse call interface for all Alaris® Infusion Pumps attached to the Workstation
- Software running on the Workstation allows remote access to the device

The device supports optional upgrades to enhance the data communication interfaces and to support software for connections to such client / server systems.

Data can be accessed and the software installed on the Workstation can be configured from a client PC using a standard Web browser; this may be performed over an Ethernet network or by directly linking to the Workstation.

The software is provided under and is subject to a license from Cardinal Health, Inc.

The Asena® brand name has been recently changed to the Alaris® brand name. This change in brand name has no effect on the intended use or functionality of the product.

Product Familiarity

The Workstation provides power and communications for the complete range of Alaris® Infusion Pumps (excluding the Alaris® System).

Prior to operation of the Workstation and prior to attempting any repairs or servicing, carefully read the *Directions for Use* (*DFU*)

As part of continuous improvement, product enhancements and changes are introduced from time to time.

Purpose of this Manual

This Technical Service Manual describes how to set up, test and maintain the Workstation. This manual is intended for use by personnel experienced in medical equipment testing and maintenance procedures.

Conventions Used in this Manual

BOLD	Used for Workstation controls and indicators and Web Service software buttons referenced in this manual, for example, **ON/OFF** button, press **OK** to continue.
'Single quotes'	Used to indicate cross-references made to another section of this manual. For example, see Chapter 2, 'Configuration & Calibration'
underline	Used to indicate links to another section of this manual.
Italics	Used to refer to other documents or manuals. For example, refer to the relevant *Directions for Use (DFU)* for further information. Also used for emphasis, for example, ...position the *narrow* end of the tool...
	Wherever this symbol is shown a Hints & Tips note is found. These notes provide useful advice or information that may help to perform the task more effectively.
	Wherever this symbol is shown a Toolbox note is found. These notes highlight an aspect of test or maintenance that is important to know about. A typical example is drawing attention to a software upgrade that should be checked that it has been installed.

General Precautions

Prior to using the Workstation, carefully read the Operating Precautions in the *Directions for Use (DFU)*.

This Workstation contains static sensitive components. Observe strict precautions for the protection of static sensitive components when attempting to repair and service the Workstation.

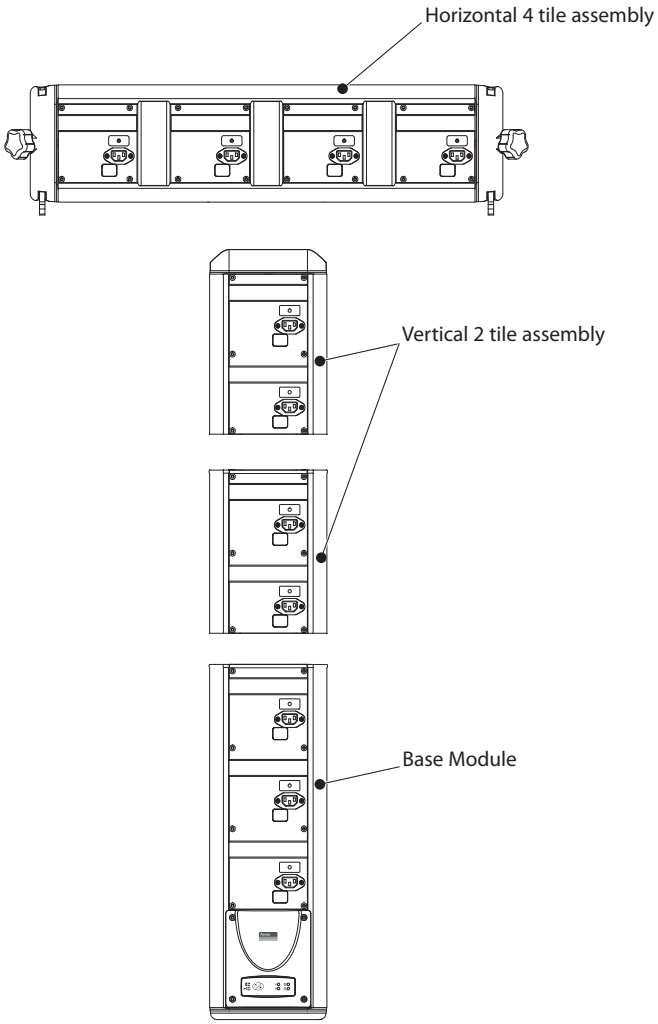
An explosion hazard exists if the equipment is used in the presence of flammable anaesthetics. Exercise care to locate the equipment away from any such hazardous sources.

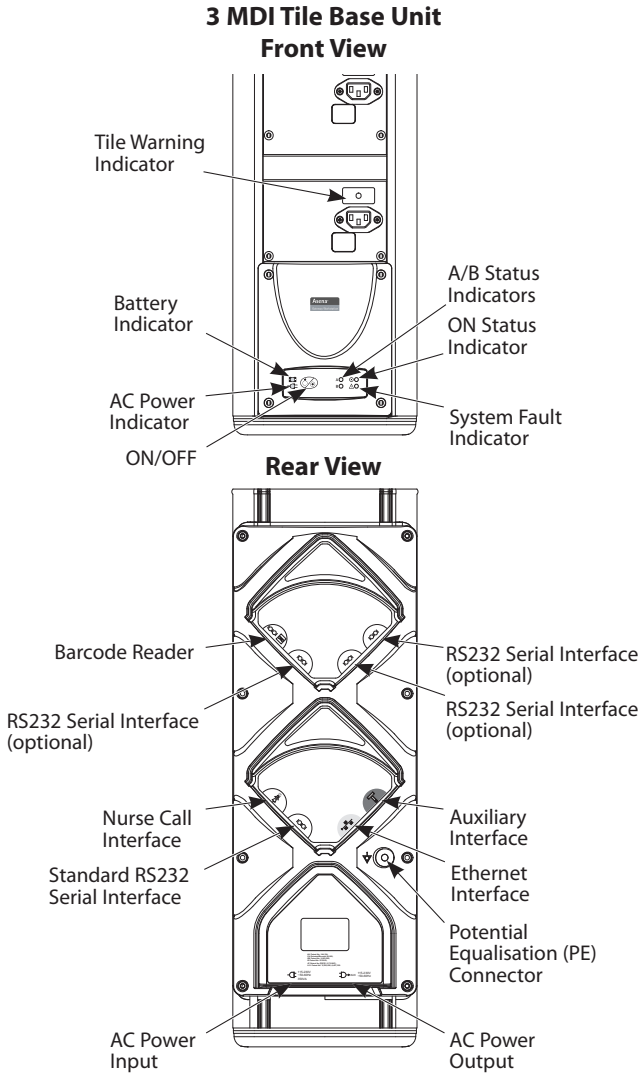
Dangerous Voltage. An electrical shock hazard exists if the Workstation casing is opened or removed. Refer all servicing to qualified service personnel.

If the equipment is dropped, subjected to excessive moisture or spillage, humidity or high temperature, or otherwise suspected to have been damaged, remove it from service for inspection by qualified service personnel.

Refer all servicing to qualified service personnel only. Circuit board repairs are not recommended - replacements are available.

Features of the Workstation





	ON/OFF Button	Press once to switch the Workstation on. Press and hold for 1 second to switch the Workstation off. In the event that the system needs to be reset, depress and hold for at least 4 seconds, then press again to switch the Workstation on.
	Battery Indicator	When illuminated the Workstation is operating from the internal battery; when flashing the battery power is depleted.
	AC Power Indicator	When illuminated the Workstation is connected to the AC power supply and the battery is being charged.
A	**'A' Status Indicator**	Provides a visual indication that the software is operational.
B	**'B' Status Indicator**	Provides a visual indication that the network is operational.
	'ON' Status Indicator	When illuminated the Workstation is operational.
	System Fault Indicator	The Workstation will illuminate this indicator when an internal fault is present and detected. (Consult accompanying documents for further information).

Chapter 2

Routine Maintenance

In this chapter

Required Test Equipment	9
Required Tests	9
Electrical Safety Test	10
Power-up Check	12
Beacon (where fitted)	12
Pump Loading/Removal Checks	12
Battery Test	13
Setting the Time and Date	14
Recommended Cleaning and Inspection	15
Performance Verification Procedure	16

Required Test Equipment

The following test equipment is required to perform the tests in this chapter.

1. Metron QA-90 Medical grade electrical safety tester
2. PC with Ethernet LAN connection, COM port and Internet Explorer 6.0 installed
3. Cat5e Ethernet cable (2m)
4. Cat5e Ethernet Crossover cable (2m)
5. Alaris® Infusion Pump with IrDA enabled which has been serviced within the past 12 months.
6. IEC AC Mains Lead, straight, 134748 (5A)

Required Tests

The following tests are required to test the different Workstation configurations.

	Workstation Configuration		
Functional test	Auxiliary Workstation (Option 1)	Workstation (Option 2)	Workstation with Wireless LAN (Option 3)
Electrical Safety Test	✓	✓	✓
Power-up check		✓	✓
Beacon (when fitted)	✓	✓	✓
Pump Loading/Removal Test	✓	✓	✓
Battery Test		✓	✓
Setting the Time and Date		✓	✓

Electrical Safety Test

The Electrical Safety Test MUST be performed twice.

The first test will ensure the PE and Insulation Resistance are acceptable for safe AC power application.

The second test, with the Workstation on AC power, is to ensure the Leakage Current values are correctly measured.

Electrical Safety Test Calibration

Ensure that no physical contact is made with the unit under test during the electrical safety test cycle.

Connect a Medical grade electrical safety tester, (e.g. Safety Tester) to a main's outlet, ensuring that the connections for Live and Neutral are correct.

1. Connect the enclosure lead to the PE point of the Workstation. Plug the mains test lead from the safety tester into the Workstation mains inlet.
2. Switch on the Workstation.
3. Set up and perform a standard electrical safety test to IEC/EN60601-1 Class I, using an Earth Continuity test current of 25A. If the safety tester requires an applied 'Type' to be entered, select 'Type B' but no applied parts should be specified.

The required test result limits are as follows:

Current Consumption	<300mA
Protective Earth Resistance (all test points)	<100mΩ
Insulation Resistance	>200MΩ
Earth Leakage Current:	
Open Supply (OS)	<1000µA
Normal Condition (NC)	<500µA
Open Supply Reverse Mains (OSRM)	<1000µA
Normal Condition Reverse Mains (NCRM)	<500µA
Enclosure Leakage Current:	
Open Supply (OS)	<500µA
Normal Condition (NC)	<100µA
Open Earth (OE)	<500µA
Open Supply Reverse Mains (OSRM)	<500µA
Normal Condition Reverse Mains (NCRM)	<100µA
Open Earth Reverse Mains (OERM)	<500µA

First Electrical Safety Test

PE Connector - Earth Continuity Test

1. Connect the AC lead from the Safety Tester to the Workstation Mains Inlet.
2. Connect the enclosure lead from the Safety Tester to the PE stud on the rear cover of the Workstation with a crocodile clip.
3. Perform the Earth Continuity Test.
4. Disconnect the enclosure lead from the PE stud.

IEC Mains Outlet Screw/Tile - Earth Continuity Test

1. Apply the free end of the enclosure lead firmly to one of the IEC Mains Outlet screws on the bottom tile.
2. Perform the Earth Continuity Test.
3. Repeat the test for one screw on *every* IEC Mains Outlet in turn.
4. Repeat the test for one screw on the tile plate.

Electrical Safety Test continued

Tile Module/Mounting Bar - Earth Continuity Test

1. Fit a high current probe to the enclosure lead.
2. Firmly apply the probe point to one of the module tile plate mounting screws.
3. Perform the Earth Continuity Test.
4. Repeat the test for each tile plate mounting screws in turn.
5. Carefully apply the probe point to one end of the tile mounting bar.
6. Perform the Earth Continuity Test.
7. Repeat the test for each tile mounting bar in turn.

Note: Ensure that, in all cases, the resistance to earth of any continuity test DOES NOT exceed 100mΩ.

IEC Outlet Earth Pin - Earth Continuity Test

1. Connect the enclosure lead to the Tile IEC Earth Point.
2. Fit the test equipment to the rear IEC Mains Outlet.
3. Perform the Earth Continuity Test.
4. Repeat the test for *each* IEC Mains Outlet in turn.

Note: Ensure that, in all cases, the resistance DOES NOT exceed 100mΩ.

Insulation Resistance Test

1. Disconnect the Earth Lead from the Tile IEC and reconnect the enclosure lead to the crocodile clip.
2. Attach the crocodile clip to the PE stud on the rear cover of the Workstation.
3. Perform the Insulation Resistance Test.

Second Electrical Safety Test

Earth and Enclosure Leakage Current Test

Ensure all Earth Continuity Tests and the Insulation Resistance Test results pass before proceeding with the Earth and Enclosure Leakage Current Test.

1. Connect the Safety Tester AC lead to the Workstation Mains Inlet.
2. Ensure that the enclosure lead is connected to the PE stud. Ensure that the Battery Indicator on the front panel keypad is illuminated. If the Battery Indicator is flashing or is not illuminated, the Workstation will require charging for at least 30 minutes before proceeding.
3. On the Safety Tester, conduct a single Earth Continuity Test.
4. Disconnect the Safety Tester from the Workstation.

Power-up Check

This test checks that the speaker and the keypad LEDs are operating correctly after power-up.

1. Observing the front panel keypad, connect the Workstation to the AC Mains supply using an IEC Mains Lead and ensure that the AC Power Indicator is illuminated.
2. Switch the Workstation on using the **ON/OFF** button.
3. Check that the **'ON' Status** indicator is illuminated, the **System Fault** indicator flashes rapidly and the secondary speaker produces a beep. After a few seconds, the primary speaker, situated at the rear of the Workstation, will produce a tone.
4. The secondary speaker will then buzz for 1 second followed by a 1 second tone from the primary speaker.
5. The **'A' Status** indicator will start flashing once per second.
6. After 30 seconds, the **'B' Status** indicator will flash approximately once every 30 seconds.

Beacon (where fitted)

This test checks that the Beacon is working correctly.

1. Connect the Workstation to the AC Mains supply using an IEC Mains Lead and ensure that the AC Power Indicator is illuminated.
2. Observing the end Beacon, switch the Workstation on using the **ON/OFF** button.
3. Check the red LED on the Beacon glows dimly.
4. Check that the red LED on the beacon flashes brightly and then dims.
5. Check that the amber LED on the beacon flashes brightly and then dims.
6. No more beacon activity should occur unless a pump is alarming.

Pump Loading/Removal Checks

Connect the Workstation to the AC Mains supply using an IEC Mains Lead and ensure that the AC Power Indicator is illuminated.

Load pump to each tile in turn and check:

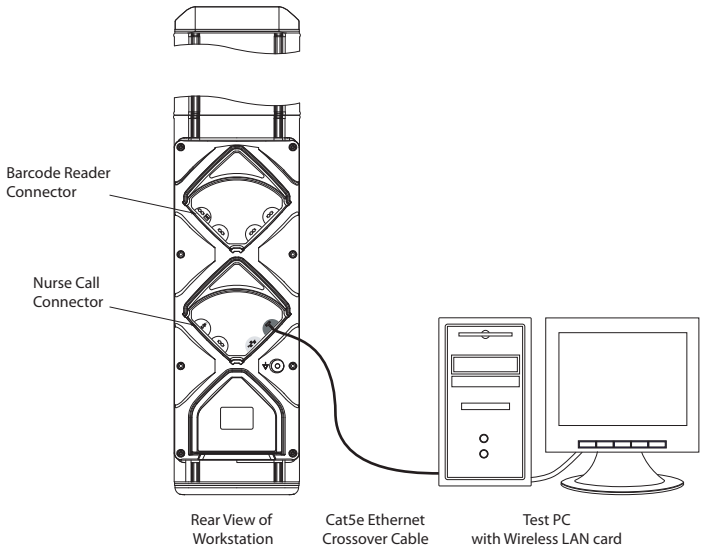
- Pump is properly located on its electrical connectors
- Pump is mechanically locked into position
- Pump mains indicator turns on when fully fitted

When removing the pump from the tile check:

- Pump mains indicator turns off
- Check that the red LED on the tile turns OFF when the pump is removed. If the LED stays ON, the Workstation should be serviced by a qualified service engineer.

Battery Test

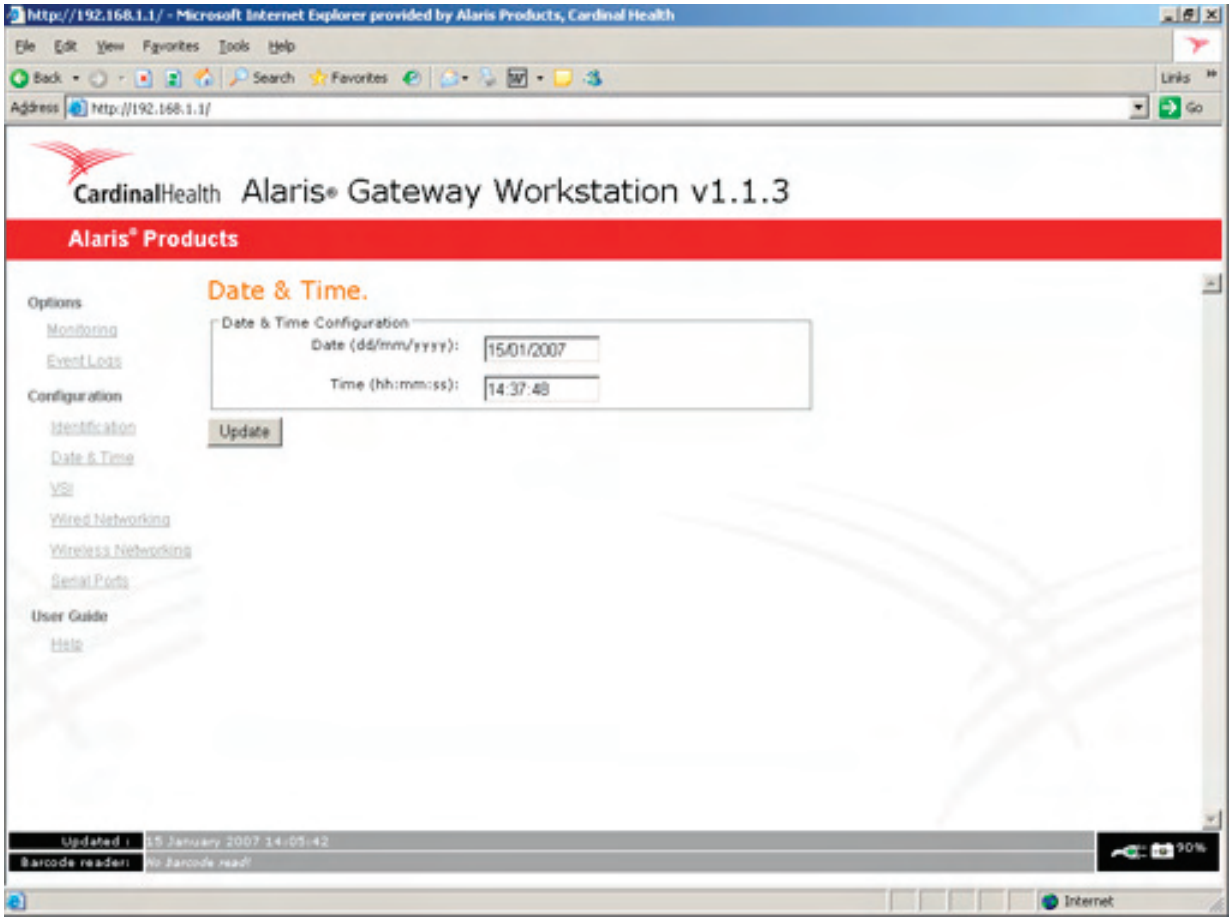
This test verifies that the battery is functioning correctly, with and without AC mains attached to the Workstation:


Barcode Reader Connector
Nurse Call Connector
Rear View of Workstation
Cat5e Ethernet Crossover Cable
Test PC with Wireless LAN card

1. Connect the Workstation to the test equipment as shown. Connect Workstation to AC mains using IEC Mains Lead.
2. Connect the Cat5e crossover cable between the Auxiliary Connector port on the rear of the Workstation and the test PC ethernet port.
3. Switch on the Workstation. Wait for the Workstation to initialise (approx. 45 seconds).
4. Manually set the test PC's IP address to 192.168.0.130, Subnet mask 255.255.255.0.
5. On the Test PC, launch Internet Explorer. In the address bar at the top of the screen enter the following address: *http://192.168.0.128*
6. Confirm that the Workstation web service startup page is displayed. Click the **Refresh** icon and confirm that the startup page continues to be displayed when the refresh is complete.
7. Click **OK** on the startup screen.
8. Check that, at the bottom right hand corner of the monitoring page on the test PC, the battery symbol shows a capacity percentage of between 5% and 100%. If the capacity is less than 5% then the Workstation must remain connected to AC mains until the capacity reaches 50%.
9. Remove the AC mains lead and ensure that the Workstation continues to operate and shows a capacity percentage of between 5% and 100%. If the unit does not operate or shows a percentage less than 5% then it is likely that a battery sub-system fault has

Setting the Time and Date

1. Ensure that the Cat5e crossover cable between the Auxiliary Connector port on the rear of the Workstation and the test PC ethernet port.
2. Connect the Workstation to AC mains using an IEC Mains Lead. Switch on the Workstation.
3. Manually set the test PC's IP address to 192.168.0.130, Subnet mask 255.255.255.0.
4. On the Test PC, launch Internet Explorer. In the address bar at the top of the screen enter the following address: *http://192.168.0.128*
5. Click **OK** on the startup screen. Confirm that the tile monitoring page is displayed.
6. Click on **Date & Time** in the navigation panel on the left of the screen. The following screen is displayed:



7. Enter the correct date and correct time .
8. Click **Update** to confirm.
9. Click on **Event Logs** in the navigation panel on the left of the screen. An entry for **Time Changed** and **Date Changed** at the bottom of the list indicates that the time and date have been updated successfully.

Recommended Cleaning and Inspection

Cleaning the Workstation: -

Before the transfer of the Workstation to a new patient and periodically during the use, clean the Workstation by wiping over with a lint-free cloth lightly dampened with warm water and a standard disinfectant / detergent solution.

Recommended cleaners are:

Brand	**Concentration**
Hibiscrub	20% (v/v)
Virkon	1% (w/v)

Do not use the following disinfectant types:

- NaDcc (such as PRESEPT)
- Hypochlorites (such as CHLORASOL)
- Aldehydes (such as CIDEX)
- Cationic Surfactants (such as Benzalkonium Chloride)
- Iodine (such as Betadine)
- Concentrated Isopropyl alcohol based cleaners will degrade plastic parts.

Before cleaning always switch OFF and disconnect from the AC power supply. Never allow fluid to enter the casing and avoid excess fluid build up on the pump.

Do not use aggressive cleaning agents as these may damage the exterior surface of the Workstation.

Do not steam autoclave, ethylene oxide sterilise or immerse this Workstation in any fluid.

To ensure that this Workstation remains in good operating condition, it is important to keep it clean and carry out the routine maintenance procedures described below.

Interval	**Routine Maintenance Procedure**
When loading pumps	Check that each pump is properly located on its electrical connectors and is mechanically locked into position.
When removing pumps	Check that the red LED turns OFF on the Tile Plate when the pump is removed. If the LED stays ON, the Workstation should be serviced by a qualified service engineer.
As required	Thoroughly clean external surfaces of the equipment before and after prolonged periods of storage.
12 Monthly	Inspect AC outlets, communication connectors and the AC inlet for damage.
	Perform electrical safety checks. The complete unit leakage current must be measured. If more than 500µA the equipment should not be used, but should be serviced by a qualified service engineer.

Performance Verification Procedure

Model / Serial Number:		**Service Order / Inventory Number:**	
Hospital Name / Reference:		**Software Version:**	
INSPECTION	**Physical inspection and clean**		
OPERATION *CH2*	**Power-up Check** Ensure that the speaker and Keypad LEDs are functioning correctly. Check Beacon operation (if fitted). **Pump Removal/Loading Checks** **Battery Test**		
SETUP *CH2*	Set the correct Date and Time.		
ELECTRICAL SAFETY TESTS *CH2*	**Class I (no applied parts)** Perform tests with no pumps attached Earth Resistance Test <= 200mΩ Earth Leakage Current <= 500 µA Enclosure Leakage Current <= 100 µA *attach printed test results*		
Verification Performed By	_____ **Sign**	_____ **Print**	_____ **Date**

CHX **indicates the chapter number in the Technical Service Manual (TSM) - 1000SM00015.**
E.G. *CH2* **= Refer to TSM Chapter 3.**

Chapter 3

Troubleshooting

In this chapter

Troubleshooting Guide 18

Troubleshooting Guide

Warnings

Use extreme caution when servicing equipment whilst it is connected to the AC mains.

This equipment contains static-sensitive components. Wherever the ESD symbol appears observe strict precautions for the protection of static-sensitive components when attempting to service and repair the equipment.

Always visually inspect the tiles, communications cables and connectors, power cord and plug for damage. If the power cord or plug are damaged they should be replaced.

Should further technical assistance be required call your local Cardinal Health Service Centre.

Workstation has been Dropped or Damaged

- If the equipment is damaged, the damaged parts should be identified and replaced before any further troubleshooting is carried out.
- During inspection, careful attention should be paid to the power tile and each docking tile, which may be damaged if the docking station is dropped.

Workstation has been Exposed to Fluids

- Excessive fluid spills can lead to fluid ingress into the docking station. Even if the fluid dries out, deposits can be left which cause the equipment to fail.
- If fluid ingress is suspected the docking station should be inspected internally.
- Clean and dry out the equipment.
- Take care to ensure dried out deposits do not remain on the PCBs or other electrical components. Replace permanently damaged tiles.

Workstation Will Not Power from AC Supply

- First check the function of the AC power cable with another piece of working equipment.
- Check that the AC power is switched on at the outlet, if applicable.
- Check that the power cord is seated properly in the AC power inlet. Also check the fuse in the AC power plug.
- If the AC Power switch does not illuminate when the pump is connected to a live AC cable, check the fuses at the AC power inlet.

Power Not Present at Pump

- Check that the docking station is switched on and has power.
- Check that the pump is correctly seated on the tile.
- Hold a magnet next to the Infra-Red communications port on the tile. If the Warning LED does not light up the tile must be replaced. If the LED does light up, suspect a problem with the pump and remove from service to be examined by qualified service personnel.

Warning LED Remains Lit when Pump is Removed from Tile

- Replace the complete tile, following the instructions in chapter 5 'Spare Parts Replacement Procedures'.

Chapter 4

Circuit Descriptions

In this chapter

Functional Module Block Diagram 20

Module Overview Functional Description 21

Functional Module Block Diagram

The Alaris® Gateway Workstation

The Workstation has been designed as a modular system providing a communications gateway between the Alaris® Infusion Pump and any Patient Data Management System (PDMS), Patient Monitoring (PM) System or Clinical Information System (CIS) that requires access to the infusion data retained within the pump.

The device supports optional upgrades to enhance the data communication interfaces and to support software for connections to such client / server systems.

The user can access data and configure software installed on the Workstation from a client PC using a standard Web browser; this may be performed over an Ethernet network or by directly linking to the Workstation.

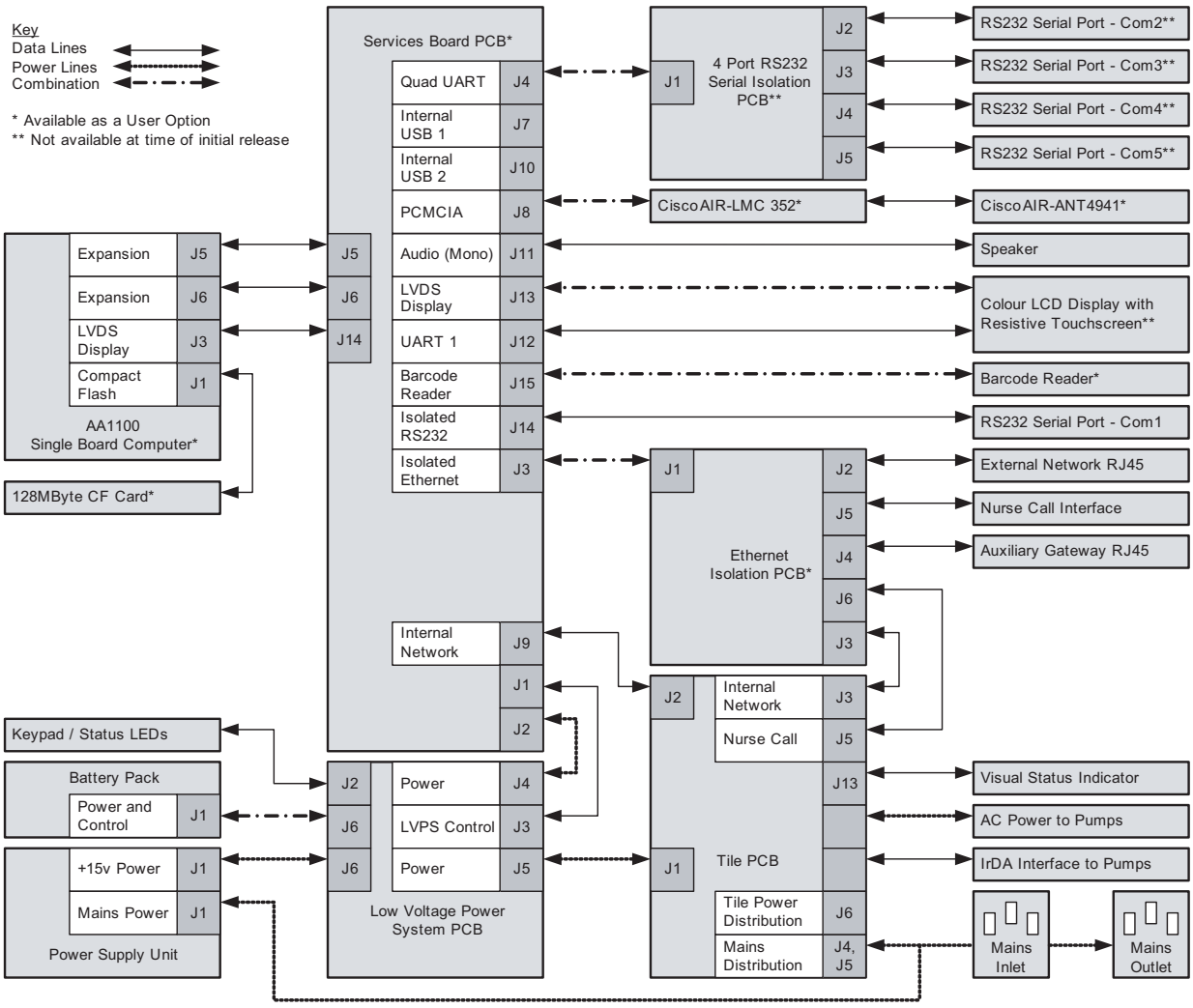
The software is provided under license from Cardinal Health, Inc.

Feature Summary

- Central management system for multiple Alaris® Infusion Pumps
- Medical Device Interface – a unique mounting mechanism proving data communications and mains power to the Alaris® Infusion Pump
- Reduced cable clutter with the use of a single AC power inlet
- Simple to set up with adaptable modular design
- Efficient organisation of multiple infusion lines and configurations
- Battery back-up in the event of power supply interruption
- High visibility beacon assists with the location of pumps in an alarm state (where fitted)
- Nurse call interface for all Alaris® Infusion Pumps attached to the Workstation
- Software running on the Workstation allows remote access to the device

Electronics Architecture

The Alaris® Gateway Workstation



Module Overview Functional Description

Services Board and Single Board Computer

The Single Board Computer (SBC) is an off the shelf processor board supplied to Cardinal Health, Inc. by DSP Designs. The SBC connects both mechanically and electrically to the Services Board PCB which provides the processor with the peripheral external interfaces. The SBC also contains the 128 MByte Compact Flash card. Also available on the Services Board is a PCMCIA connector into which attaches the Cisco wireless card and antenna.

Low Voltage Power System Board

The Low Voltage Power System Board (LVPS) provides the Workstation with low voltage DC power. The LVPS Board gets power from the PSU module connected to the AC mains supply. A smart rechargeable battery pack is connected to the LVPS Board as a second power source used when the AC mains is unavailable; this makes the LVPS Board act as a UPS.

The LVPS Board has an on-board charger that is responsible for keeping the smart battery pack charged. The LVPS Board provides regulated 3.3V and 5V to the Services Board and also provides either +15V from the power supply or battery terminal voltage to the Tile Boards. The circuitry for switching on and off the Docking Station is on the LVPS Board, which the User activates with an externally mounted keypad.

Tile Board

In the Workstation the Tile Board provides the interface to the pumps providing power (directly from the AC mains) and an IrDA port for communication with the pumps. The Tile board itself communicates via the Internal Switched Ethernet to the SBC. The Tile board also controls the Visual Status Indicator and Nurse Call interface directly without the need for the SBC to be fitted.

The Tile Board is designed in four different configurations:

- Vertical mount, two tiles high
- Vertical mount, three tiles high
- Horizontal mount, two tiles wide
- Horizontal mount, three tiles wide

To enable the modular construction, Tile Boards connect in series to extend the number of tiles within the Workstation as the configuration shape grows.

Ethernet Isolation Board

The function of the Ethernet Isolation Board is to provide electrical separation between the internal electronics of the Workstation and the external Ethernet connections. This board isolates both the primary 10 Base T / 100 Base-Tx interface and also the Ethernet connection with an Auxiliary Docking Station. The board also provides the relay for the nurse call function.

Power Supply Unit

The Power Supply Unit (PSU) converts AC mains voltage into +15VDC used to power all electronic sub-systems within the Workstation when AC mains is connected. The AC mains input is implemented as a spur off the Live and Neutral wiring within the device that also provides AC mains power to the pumps and to the AC mains outlet connector.

Battery Pack

A 9.6v, 2.7A internal battery provides a UPS function should a temporary disconnection from the AC mains power supply occur. The NiMH battery pack includes a gas gauge and supports the SMB interface.

Chapter 5

Spare Parts Replacement Procedures

In this chapter

Introduction	23
Torque Guide	23
3 Tile Assembly	24
Front Cover and LVPS PCB	25
Power Supply Unit	26
Battery Pack	27
Services Board	28
Upper Comms Pod	30
Lower Comms Pod	31
IEC Pod/Rear Cover	33
Saddle Kit	35
Cabling Diagrams	36
Labels	46
Trolley Mounting Kit	47
Bar Mounting Kit	49
Pole Mounting Kit	50

Introduction

- **Ensure the Workstation is disconnected from the AC power supply and switched off before attempting to service**
- **The Workstation contains static-sensitive components. Observe strict ESD precautions at all times**
- **Only use Cardinal Health recommended spare parts**
- **Following all spare part replacement and repair activities, testing must be performed in accordance with the Performance Verification Procedure (PVP), see 'Chapter 2, 'Routine Maintenance'**

Torque Guide

The torque levels established during the manufacturing process are outlined in the 'Refitting Notes' sections of this chapter. Torque levels selected apply throughout product life for the Workstation.

Use the information as a guide to the 'do not exceed' torque levels when servicing the Workstation. When servicing, it is recommended that torque is applied gradually until the component is secure. In any process do not exceed the stated levels.

If a torque driver is available for servicing this will help control the applied torque; otherwise, be aware that excess force may cause the component to fail.

Where a torque level is not stated in the 'Refitting Notes' sections of this chapter then fixing should be hand-tight.

1. The force required to create a thread for the first time is more than when reassembling a previously made joint.
2. Always use the correct torque level when first making an assembly stage.
3. Take care with the torque applied when re-assembling parts. Less torque is required, so a hand tool may be more appropriate.
4. In many situations a stripped thread will require replacement of the failed component.
5. The head patterns of the fasteners are of the following types:
   - Snake Eye Tool Workstation (fits into a ¼" drive socket, used on tie rods when pulling modules together)
   - Pozi Number 1 (smaller X head)
   - Torx Number T10 (Medium star profile, used on the majority of Torx fasteners)
   - Torx Number T20 (Larger star shape, typically for case securing screws)
   - M3 nuts (Hex head with 5.5mm across flats (AF) drivers)
   - M4 nuts (Hex head with 7mm across flats (AF) drivers)
6. Always select the correct tool and bit pattern for the fastener.

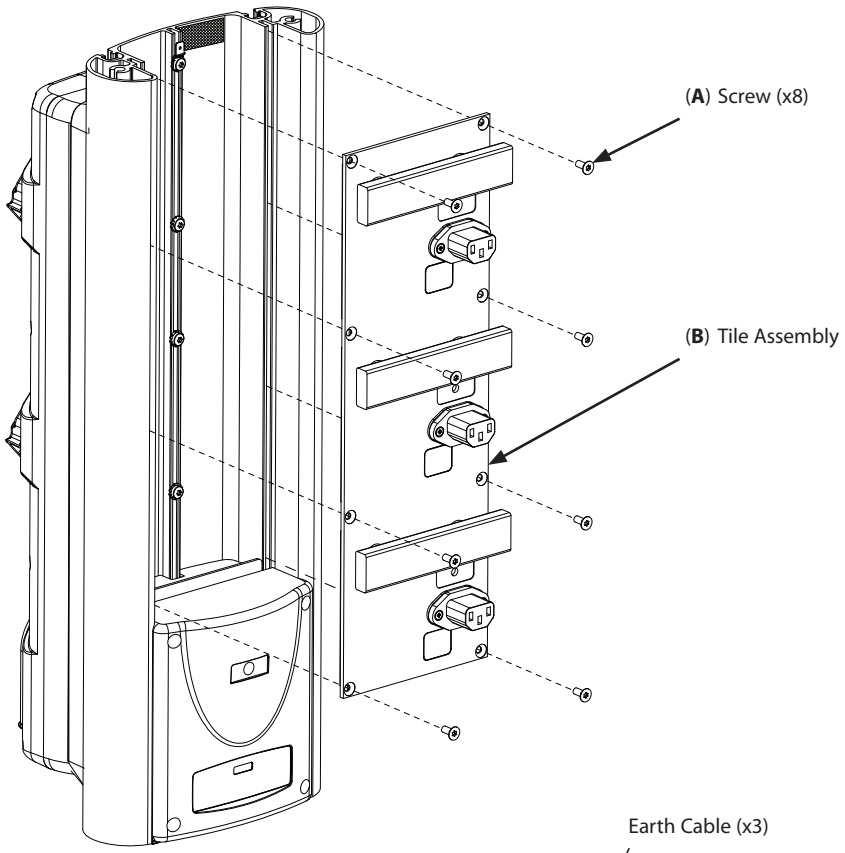
3 Tile Assembly

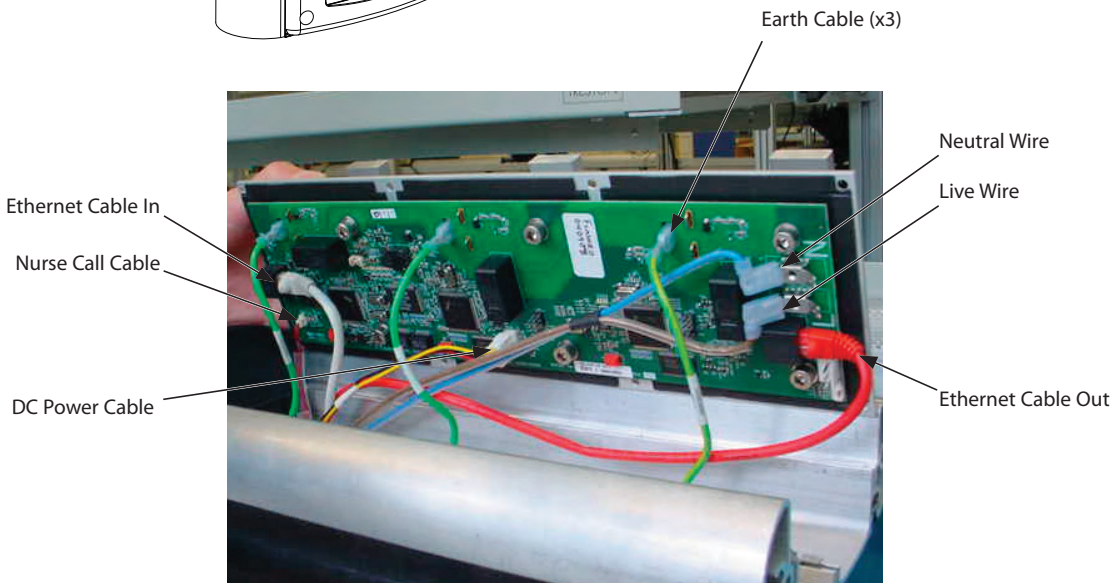
Replacement Procedure

1. Remove the eight Screws (A) on the tile assembly (B).
2. Disconnect the Ethernet Cable Out (red), Neutral Wire, Live Wire, DC Power Cable (J6), Ethernet Cable In (grey), Nurse Call Cable (J19) and the three Earth Cables.
3. Replace the Tile Assembly.

Refitting Note:

Ensure that all connectors are pushed fully home and that the cables are not trapped under relays. Torque screws to 170cNm





Spare Parts

Item	Description	Part Number
A	M4x10 CSK TORX HD A2 BN13278	1000SP01217
B	ASSY TILE PLATE 3 HIGH ASENA GATEWAY	1000SP00599

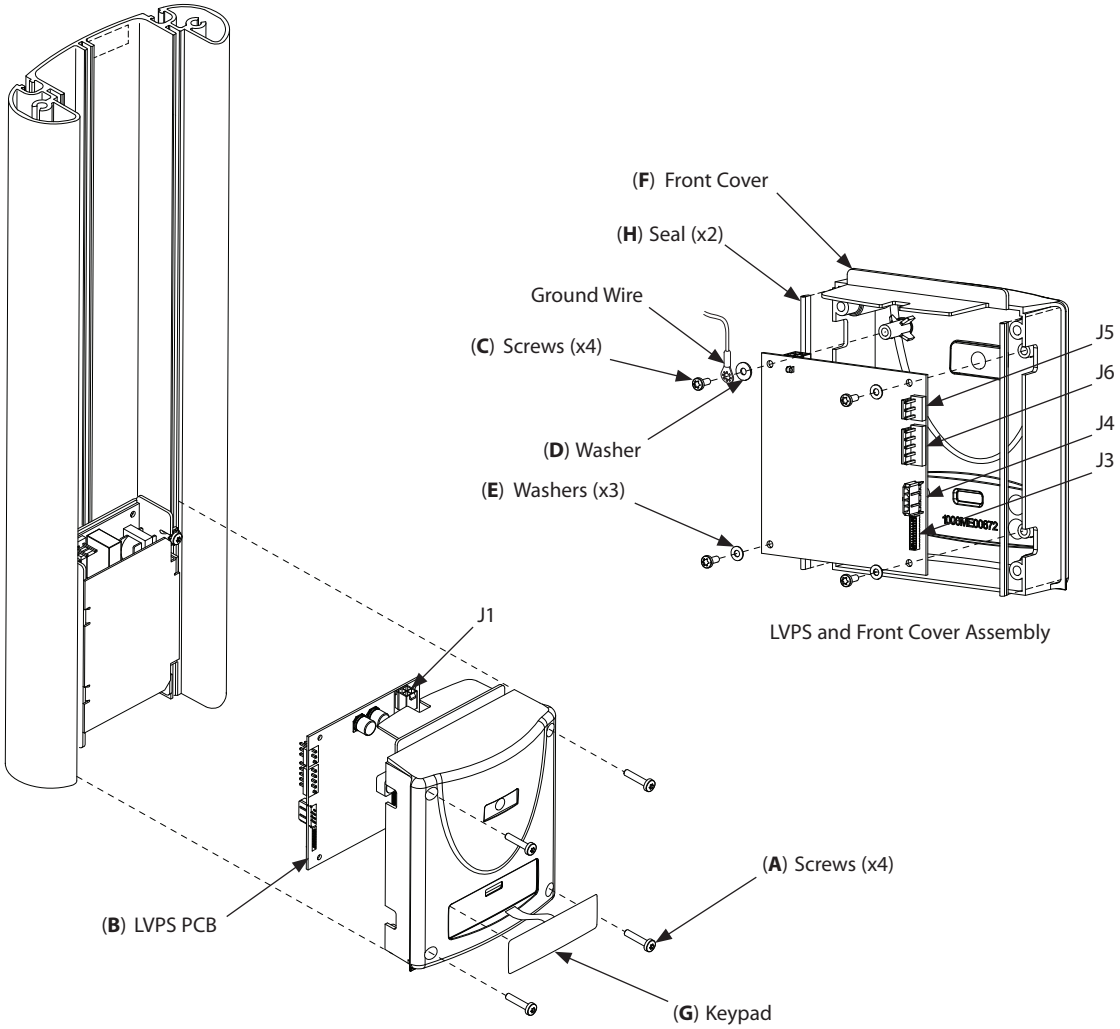
Front Cover and LVPS PCB

Replacement Procedure

1. Remove the 3 Tile Assembly.
2. Remove the four Screws (A) securing the Front Cover Assembly.
3. Disconnect the Cable Assembly Services LVPS (J3), Cable Assembly Services Power (J4), Cable Assembly Battery LVPS (J6) and the Cable Assembly Tile LVPS (J5) from the LVPS PCB (B).
4. Remove the four screws (C), four washers (D) & (E) and Ground Wire securing the LVPS PCB to the Front Cover (F).
5. Release the locking tabs for Molex connector (J2) and remove the Keypad Panel (G) flexi tail.
6. Remove the Front Cover Seal (H).
7. Reassemble in reverse order.

Refitting Note:

When replacing the Front Cover Seal, fit the Seal to both edges of the Front Cover. The flat edge goes against the side of the Front Cover and the edge with the tube goes into the Front Cover recess. Ensure that all connectors are pushed fully home. Torque screws to 45cNm. Fit the Front Cover to the extrusion and torque to 170cNm.



LVPS and Front Cover Assembly

Spare Parts

Item	Description	Part Number
A	M4x20 PAN HD TORX A2 BN5653	1000SP01217
B	ASSEMBLY PCB LVPS	1000EL00628
C	M3x8 PAN HD TORX A2 ISO14583	1000SP01217
D	WASHER M3 PLAIN Z+C	"
E	FLAT WASHER NYLON M3 TO ISO 7089	"
F	COVER FRONT AGW	1000SP01215
G	LABEL AGW FRONT	"
H	SEAL FRONT COVER AGW	"

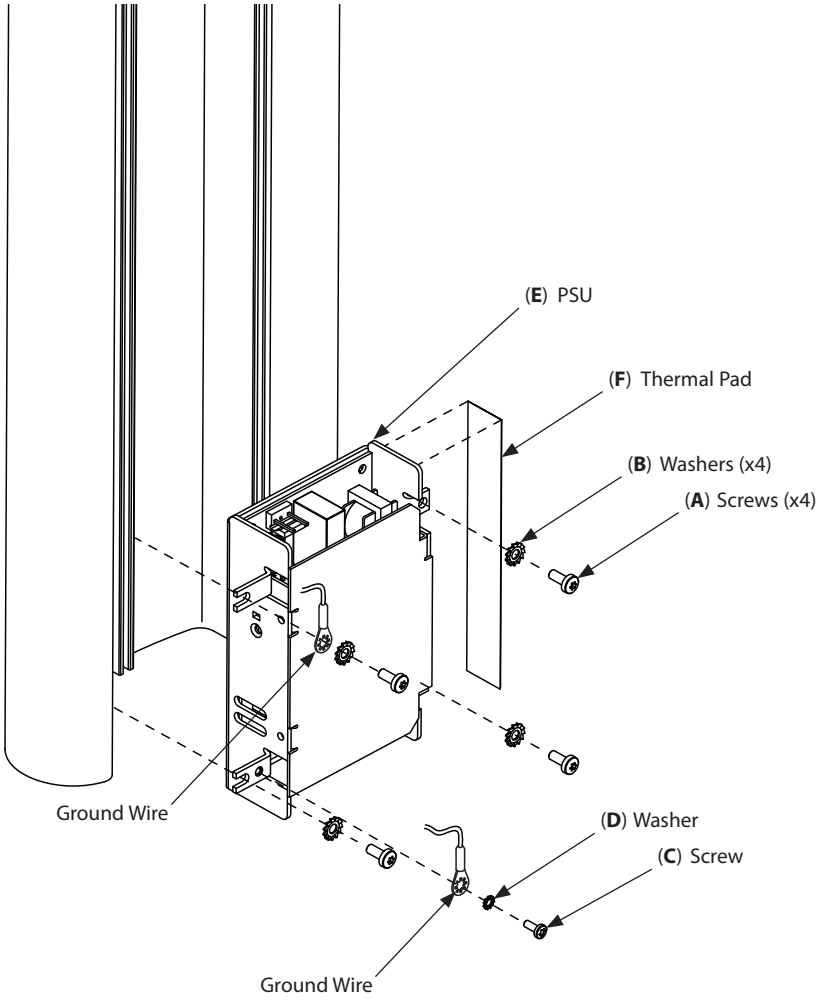
Power Supply Unit

Replacement Procedure

1. Remove the 3 Tile Assembly.
2. Remove the Front Cover and disconnect plug from LVPS PCB.
3. Remove the five Screws (A) & (C), the five Washers (B) & (D) and the Ground Wires securing the PSU to the Extrusion.
4. Remove the PSU (F). Ensure that the Thermal Pad (F) is fully removed from the Extrusion.
5. Reassemble in reverse order.

Refitting Note:

Ensure that the Thermal Pad is fitted to the side of the PSU, the protective film has been removed and the PSU is replaced with the Thermal Pad tight to the side of the extrusion. Torque screws to 170 cNm.



Spare Parts

Item	Description	Part Number
A	M4x10 PAN HEAD BIN 5653	1000SP01217
B	STAR WASHER M4 DIN6797	"
C	M3x8 PAN HD TORX A2 ISO14583	"
D	WASHER M3 SHAKEPROOF EXTERNAL	"
E	ASSEMBLY PSU SWITCH MODE	1000SP01216
F	THERMAL PAD PSU	"

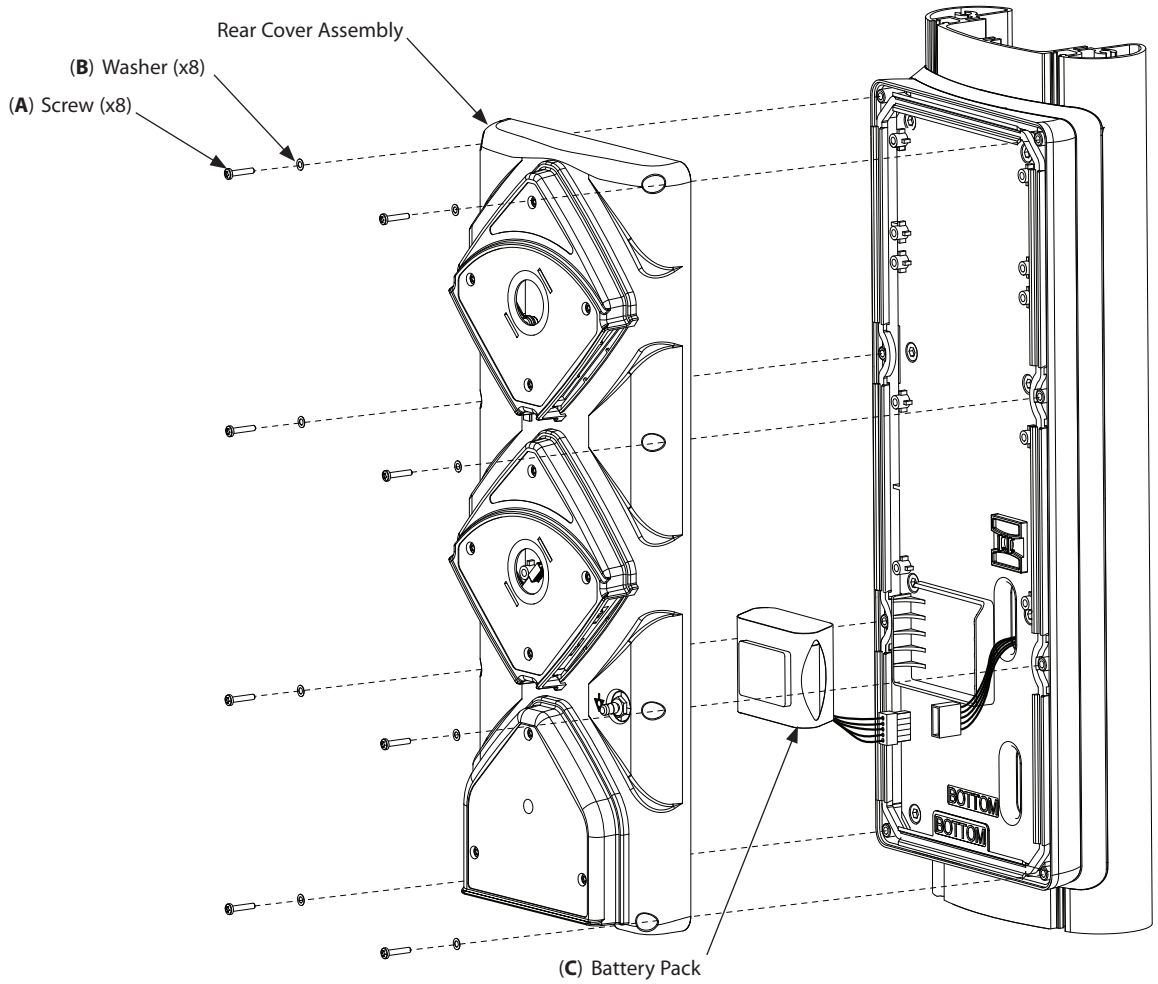
Battery Pack

Replacement Procedure

1. Remove the eight Screws (A) and Washers (B) securing the Rear Cover Assembly to the Power Base Module.
2. Open the Cover Assembly by hinging along one long face. Avoid stressing the connected cables and lay the Cover along side the assembly.
3. Disconnect the Battery (C) and remove from saddle slot.
4. Reassemble in reverse order.

Refitting Note:

Ensure cable assemblies are not trapped and the Back Cover Seal is fitted to the Saddle Lug before fitting the Back Cover. Torque Screws to 45 cNm.



Spare Parts

Item	Description	Part Number
A	M3x16 PAN HD TORX A2 ISO 14583	1000SP01217
B	WASHER M2 WAVEY SST	"
C	GATEWAY ASSEMBLY BATTERY PACK	1000SP00605

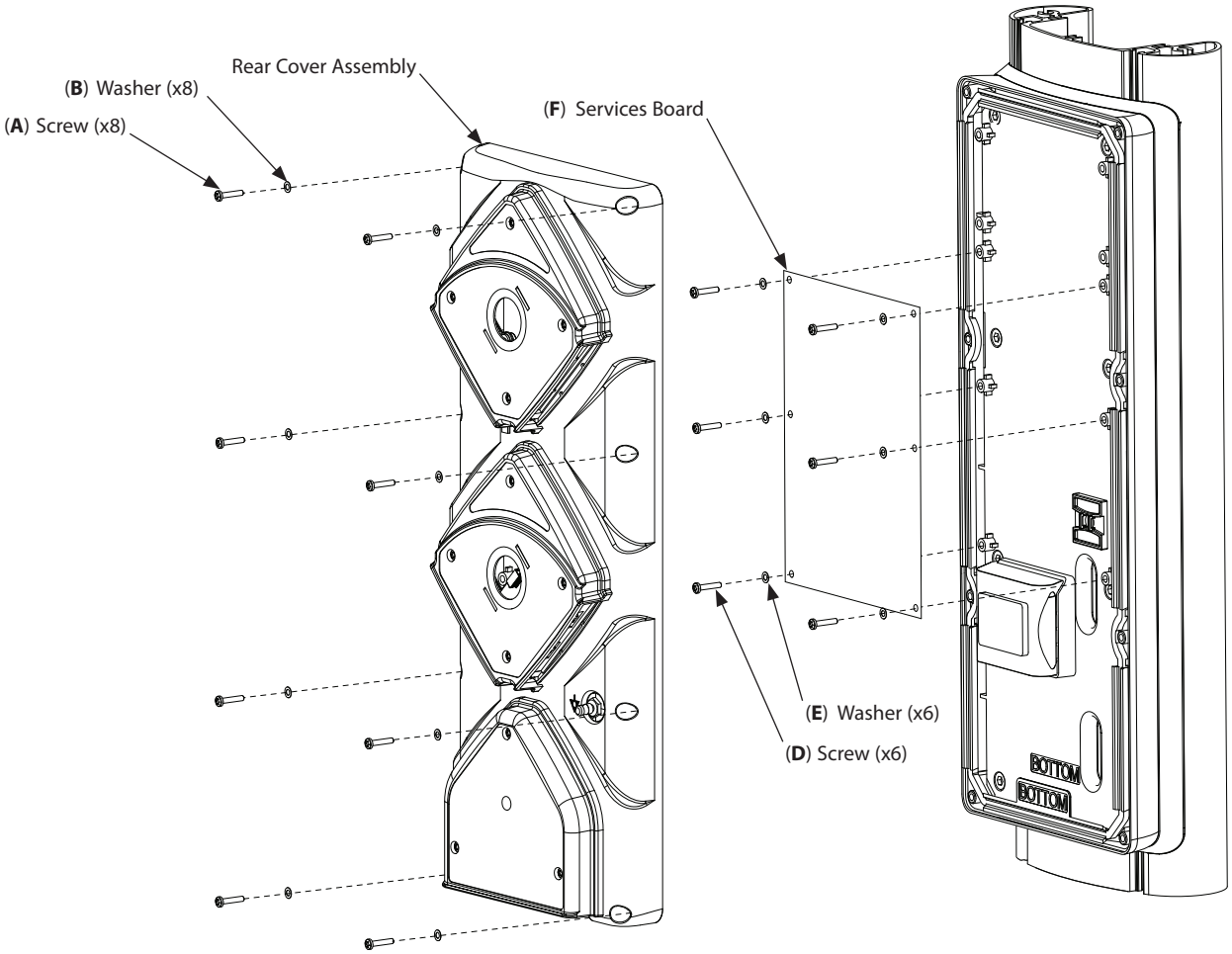
Services Board

Replacement Procedure

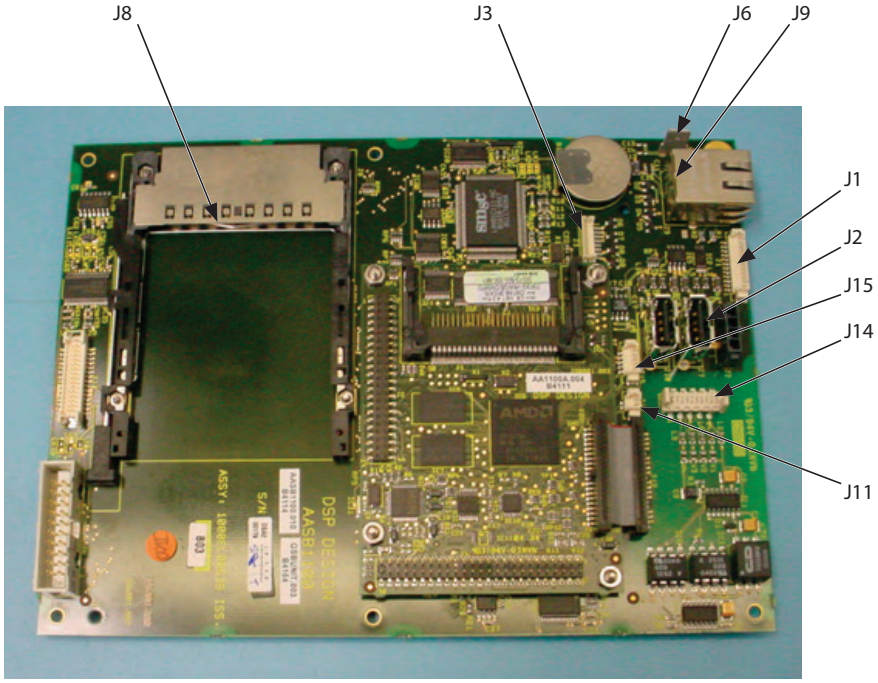
1. Remove the eight Screws (A) and Washers (B) securing the Rear Cover Assembly to the Power Base Module.
2. Open the Cover Assembly by hinging along one long face. Avoid stressing the connected cables and lay the Cover along side the assembly.
3. Disconnect the Speaker (J11), RS232 Cable Assembly (J14) and Barcode Reader Assembly (J15) (if fitted).
4. Disconnect Grey Ethernet Cable Assy (J9) and the Services Ethernet Cable Assy (J3).
5. Disconnect the Earth Services Cable Assy (J16), the Service Power Cable Assy (J2) and the Services LVPS Cable Assy (J1).
6. Disconnect the Wireless LAN Card (C) from the PCMCIA slot (option 3 only).
7. Remove the six Screws (D) and Washers (E).
8. Remove the Services Board (F).
9. Reassemble in reverse order.

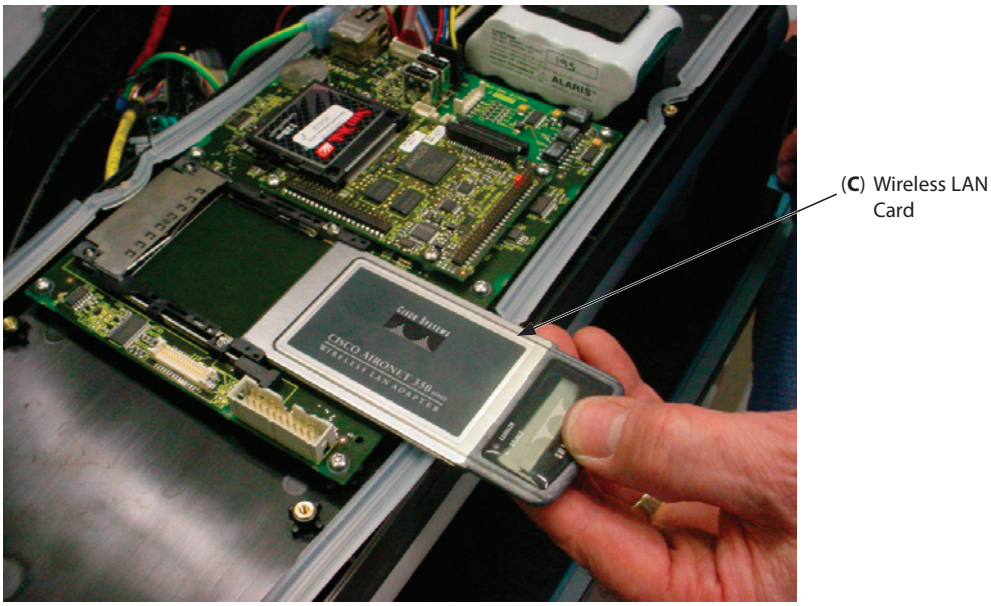
Refitting Note:

Ensure the Wireless LAN card and all cable connections are pushed fully home.
Torque Screws to 45 cNm.



Services Board (continued)





Spare Parts

Item	Description	Part Number
A	M3x8 PAN HD TORX A2 ISO14583	1000SP01217
B	FLAT WASHER NYLON M3 TO ISO 7089	"
C	CISCO AIR-PCM352 PCMCIA WIRELESS CARD	1000EL00824
D	M3x8 PAN HD TORX A2 ISO 14583	1000SP01217
E	FLAT WASHER NYLON M3 TO ISO 7089	"
F	SERVICES BOARD	1000EL00638
*	ASSEMBLY CABLE EARTH SERVICES BOARD	1000EL00799
*	GATEWAY CABLE ASSY ISOLATED RS232	1000EL00679
*	GATEWAY CABLE ASSY SERVICES ETHERNET	1000EL00681
*	GATEWAY CABLE ASSY SERVICES POWER	1000EL00683
*	GATEWAY CABLE ASSY SERVICES LVPS	1000EL00682
*	GATEWAY CABLE ASSY TILE ETHERNET IN	1000EL00675

* Item not shown

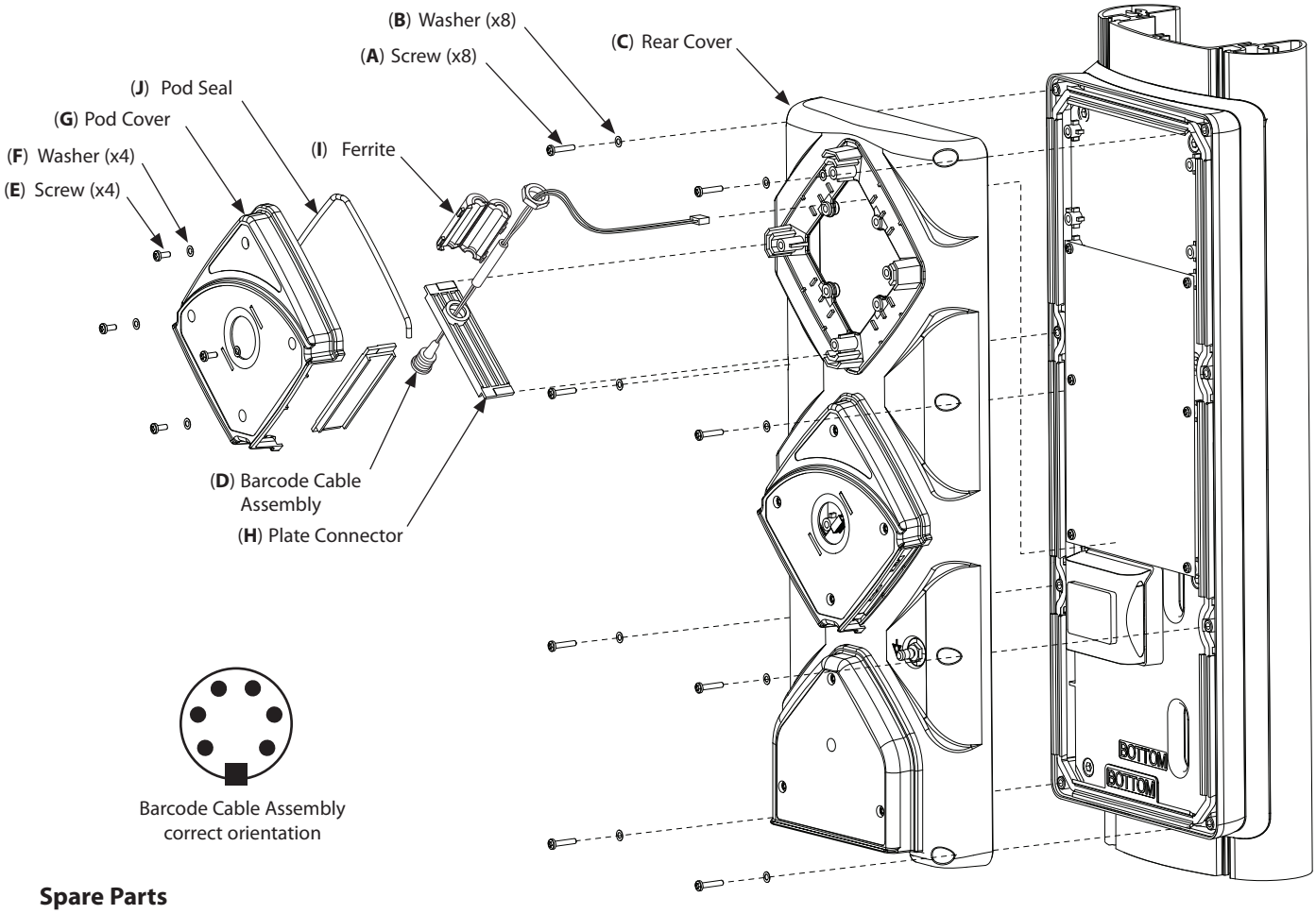
Upper Comms Pod

Replacement Procedure

1. Remove the eight Screws (A) and Washers (B) securing the Rear Cover (C) to the Power Base Module.
2. Open the Cover Assembly by hinging along one long face. Avoid stressing the connected cables and lay the Cover along side the assembly.
3. Disconnect the Barcode Cable Assembly (D) from the Services Board (J15).
4. Remove the labels from the Comms Pod Cover (G). Remove the four Screws (E) and four Washers (F) securing the Comms Pod Cover. Remove the Pod Cover and Pod Seal (J).
5. Remove the Plate Connector (H), unclip the Ferrite (I) and remove.
6. Remove the Barcode Cable Assembly Nut using an 11mm spanner.
7. Remove the Barcode Cable Assembly.
8. Reassemble in reverse order.

Refitting Note:

Ensure the Barcode Cable Assembly is in the correct orientation.
Ensure that the Ferrite is properly secured and does not move.
Torque screws to 45 cNm.



Barcode Cable Assembly correct orientation

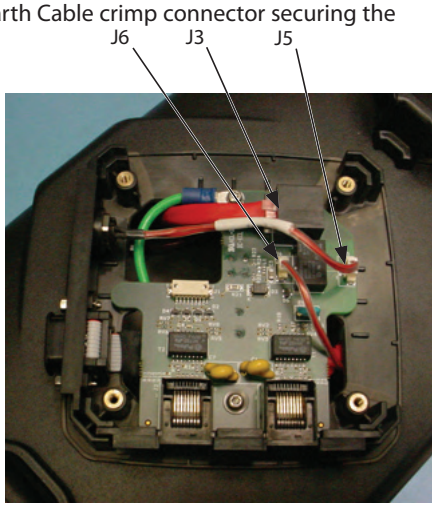
Spare Parts

Item	Description	Part Number
A	M3x16 PAN HD TORX A2 ISO 14583	1000SP01217
B	WASHER M3 WAVEY SST	"
C	COVER REAR ASENA GATEWAY	1000ME00595
D	BARCODE CABLE ASSEMBLY	1000EL00679
E	M3x8 PAN HD TORX A2 ISO14586	1000SP01217
F	WASHER M3 WAVY SST	"
G	POD COMMS ASENA GATEWAY	1000SP01214
H	PLATE CONNECTOR BARCODE	1000ME01642
I	FAIR-RITE 0431173951	0000EL00940
J	SEAL COMMS POD ASENA GATEWAY	1000SP01214

Lower Comms Pod

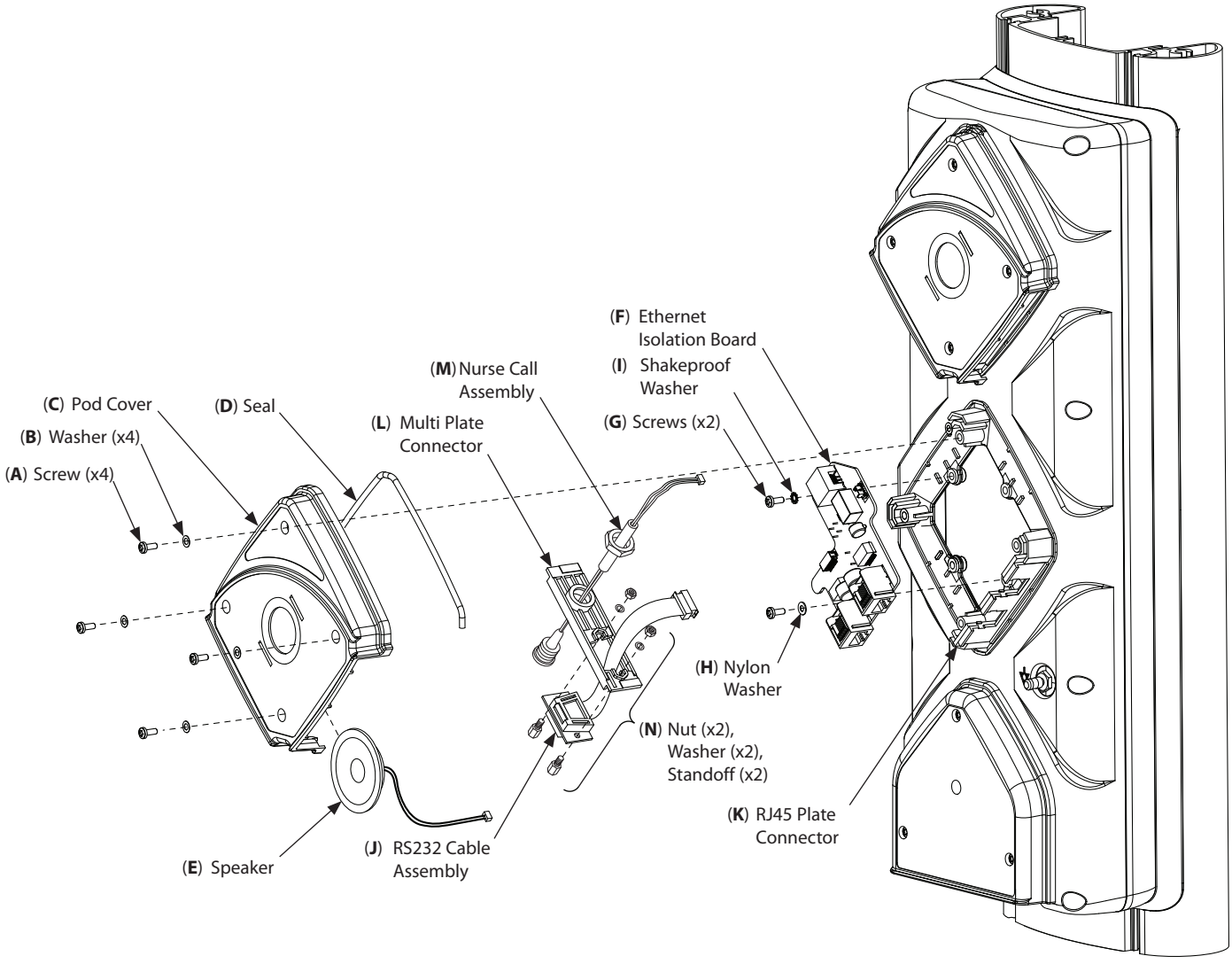
Replacement Procedure

1. Remove the labels from the Comms Pod Cover (C) Remove the four Screws (A) and four Washers (B) securing the Comms Pod Cover and Seal (D).
2. Slide the Speaker (E) (if fitted) from the retainer in the rear of the Comms Pod Cover and disconnect from the Services Board (J11). Remove the Pod Cover.
3. Disconnect the Nursecall Connector (J5), Nursecall Cable Assembly (J6), red Ethernet Cable (J3) and the Services Ethernet Cable Assembly (J1) from the Ethernet Isolation Board (F).
4. Remove the two Screws (G), Nylon Washer (H), Shakeproof Washer (I) and Ethernet Earth Cable crimp connector securing the Ethernet Isolation Board. Remove the Ethernet Isolation Board.
5. Disconnect the RS232 Cable Assembly (J) from the Services Board (J14).
6. Remove the RJ45 Plate Connector (K) and the Multi Plate Connector (L).
7. Remove the Nurse Call Connector Assembly (M) using an 11mm spanner.
8. Remove the two Washers, Nuts and Standoffs (N).
9. Remove the RS232 Cable Assembly.
10. Reassemble in reverse order.



Refitting Note:

Ensure that the RJ45 connectors are pushed firmly into the connector plate.
Apply Loctite 243 to the threaded end of the Standoffs (N) and torque to 25cNm.
Ensure that the Nurse Call Connector is in the correct orientation.
Torque screws to 45cNm



Lower Comms Pod (continued)

Spare Parts

Item	Description	Part Number
A	M3x8 PAN HD TORX A2 ISO14583	1000SP01217
B	WASHER M3 WAVEY SST	"
C	POD COMMS ASENA GATEWAY	1000SP01214
D	SEAL COMMS POD ASENA GATEWAY	"
E	ASSEMBLY SPEAKER ALARM AGW	1000SP00652
F	ASENA GATEWAY ETHERNET ISOLATION BOARD	1000EL00655
G	M3x8 PAN HD TORX A2 ISO14583	1000SP01217
H	FLAT WASHER NYLON M3 TO ISO 7089	"
I	WASHER M3 SHAKEPROOF EXTERNAL	"
J	GATEWAY CABLE ASSY ISOLATED RS232	1000EL00679
K	PLATE CONNECTOR RJ45 TYPE2 ASENA GATEWAY	n/a
L	PLATE CONNECTOR TYPE MULTI ASENA GATEWAY	n/a
M	GATEWAY CABLE ASSY ISOLATED NURSE CALL	1000EL00677
N	SCREW LOCK KIT FEMALE RS232	1000SP01217
*	LOCTITE 243	0000ME00672

* Item not shown

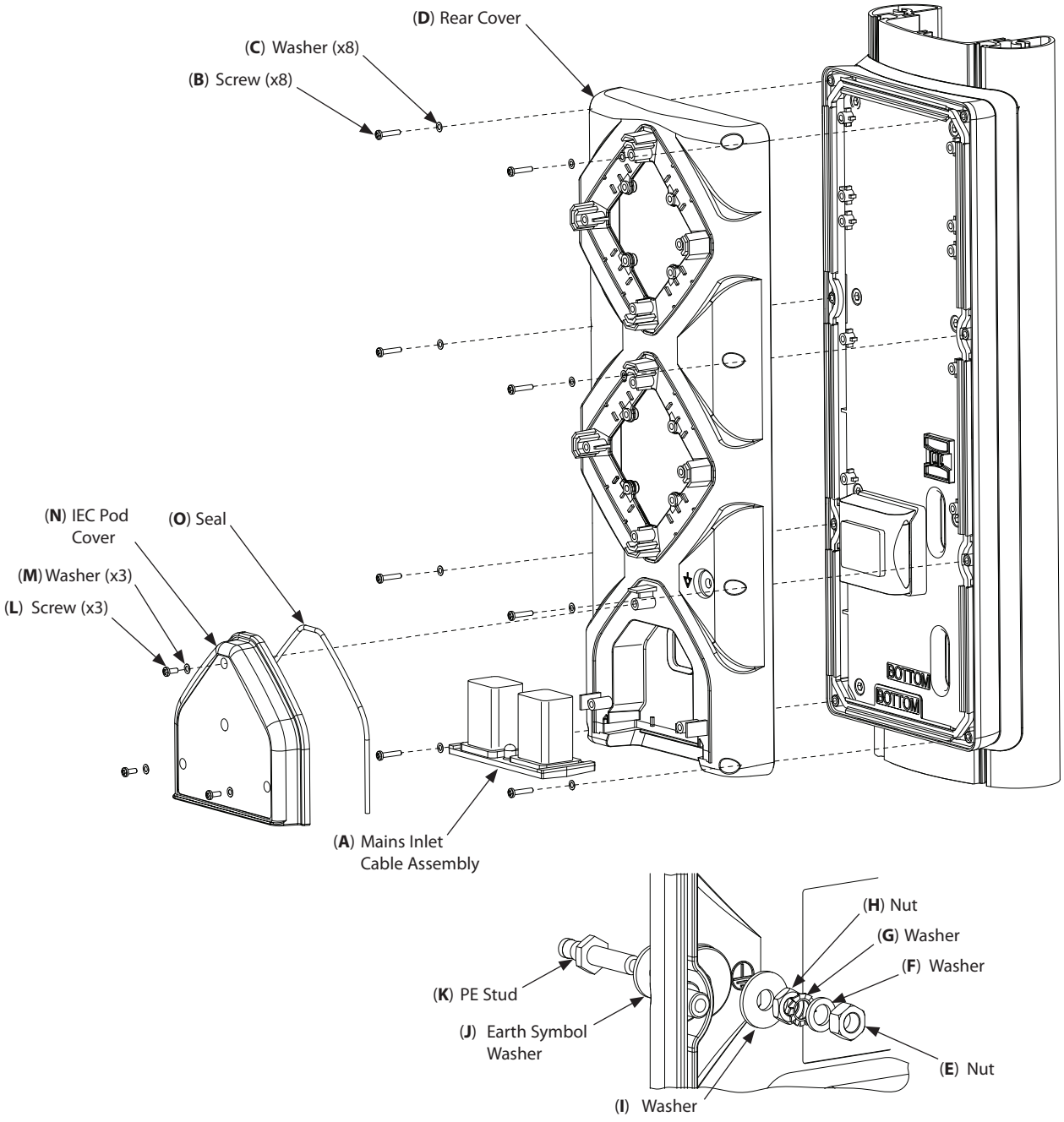
IEC Pod/Rear Cover

Replacement Procedure

1. Ensure the Mains Inlet Cable Assembly (A) is disconnected from the Tile PCB (see '3 Tile Assembly') and the Power Supply Unit (see 'Power Supply Unit')
2. Remove the eight screws (B) and washers (C) securing the Rear Cover (D) to the Power Base Module.
3. Remove the PE Connector Nut (E), Washer (F).
4. Remove the Ethernet Earth Cable, the Services Earth Cable and the Mains Inlet Cable crimp connectors.
5. Remove the Shakeproof Washer (G), Nut (H) and M6 Washer (I).
6. Remove the PE Stud (K) and Earth Symbol Washer (J).
7. Remove the three Screws (L) and Washers (M) securing the IEC Pod Cover (N) and Seal (O). Remove the IEC Pod Cover.
8. Remove the Mains Inlet Cable Assembly (A) from the slot in the Rear Cover Assembly.
9. Reassemble in reverse order.

Refitting Note:

Torque Nuts (H) and (E) to 150cNm. Torque Screw (B) and (L) to 45 cNm.



Rear Cover (continued)

Spare Parts

Item	Description	Part Number
A	GATEWAY CABLE ASSY MAINS IN	1000EL00685
B	M3x16 PAN HD TORX A2 ISO 14583	1000SP01217
C	WASHER M2 WAVEY SST	"
D	COVER REAR ASENA GATEWAY	1000ME00595
E	NUT M6 PLAIN DIN 934 A2	1000SP01217
F	WASHER M6 BRASS ISO 7092	"
G	WASHER M6 SHAKEPROOF DIN 67898, A2	"
H	NUT M6 THIN 4035 A2	"
I	WASHER M6 PLAIN	"
J	WASHER EARTH	"
K	PE STUD M6x20	0000ME00547
L	M3x8 PAN HD TORX A2 ISO14583	1000SP01217
M	WASHER M3 WAVEY SST	"
N	POD IEC ASENA GATEWAY	1000SP01214
O	SEAL IEC POD ASENA GATEWAY	"
*	ASSEMBLY CABLE EARTH SERVICES BOARD	1000EL00799
*	ASSEMBLY CABLE EARTH ETHERNET ISOLATION	1000EL00802

* Item not shown

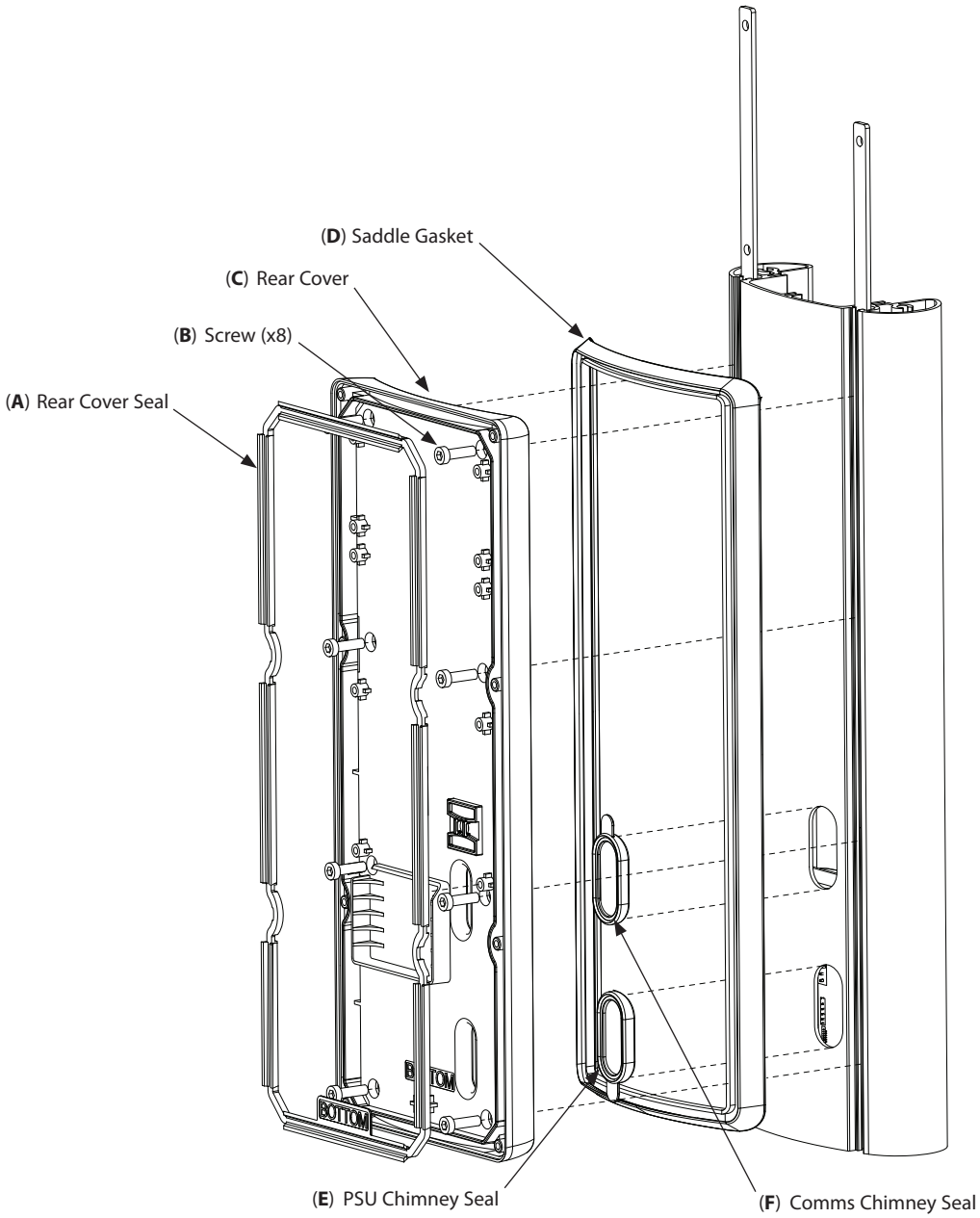
Saddle Kit

Replacement Procedure

1. Remove the Rear Cover Seal (A).
2. Remove the eight Screws (B) securing the Rear Cover (D) to the extrusion.
3. Remove the Saddle Gasket (D), PSU Chimney Seal (E) and the Comms Chimney Seal (F) from the Rear Cover.

Refitting Note:

Ensure that all seals and gaskets are pushed fully home and are fitted in the correct orientation.
Torque the eight Screws (B) to 200cNm.

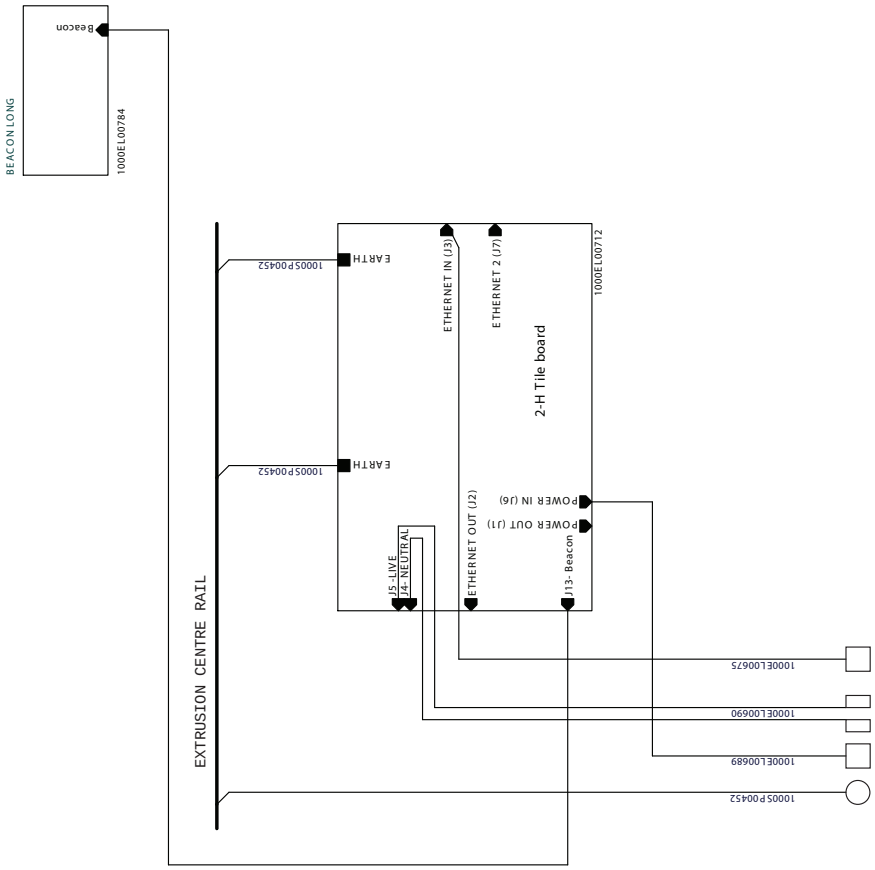


Spare Parts

Item	Description	Part Number
A	SEAL COVER REAR ASENA GATEWAY	1000SP01213
B	SCREW SKT CAP M6x20 DIN 6912	1000SP01217
C	SADDLE REAR COVER ASENA GATEWAY	1000SP01213
D	SADDLE GASKET ASENA GATEWAY	"
E	SEAL PSU CHIMNEY AGW	"
F	SEAL COMMS CHIMNEY AGW	"

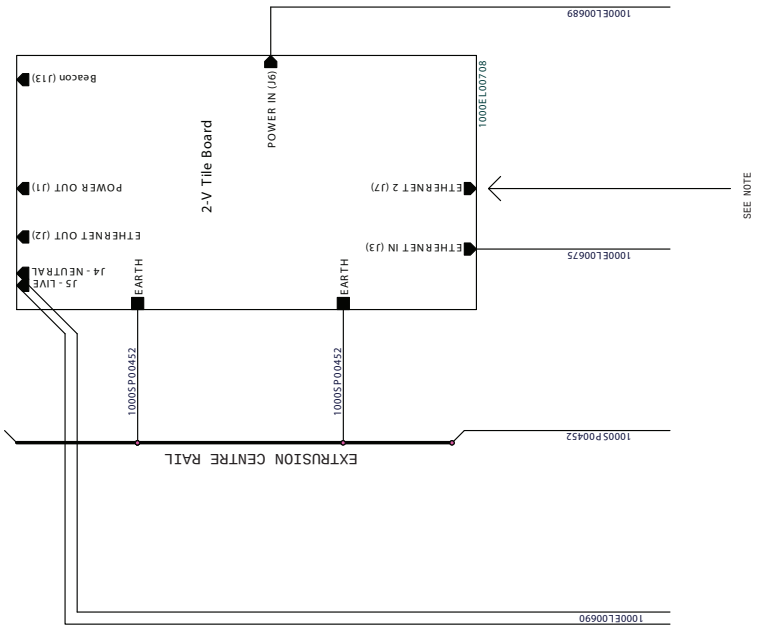
Cabling Diagrams

2 Horizontal Module



Cabling Diagrams (continued)

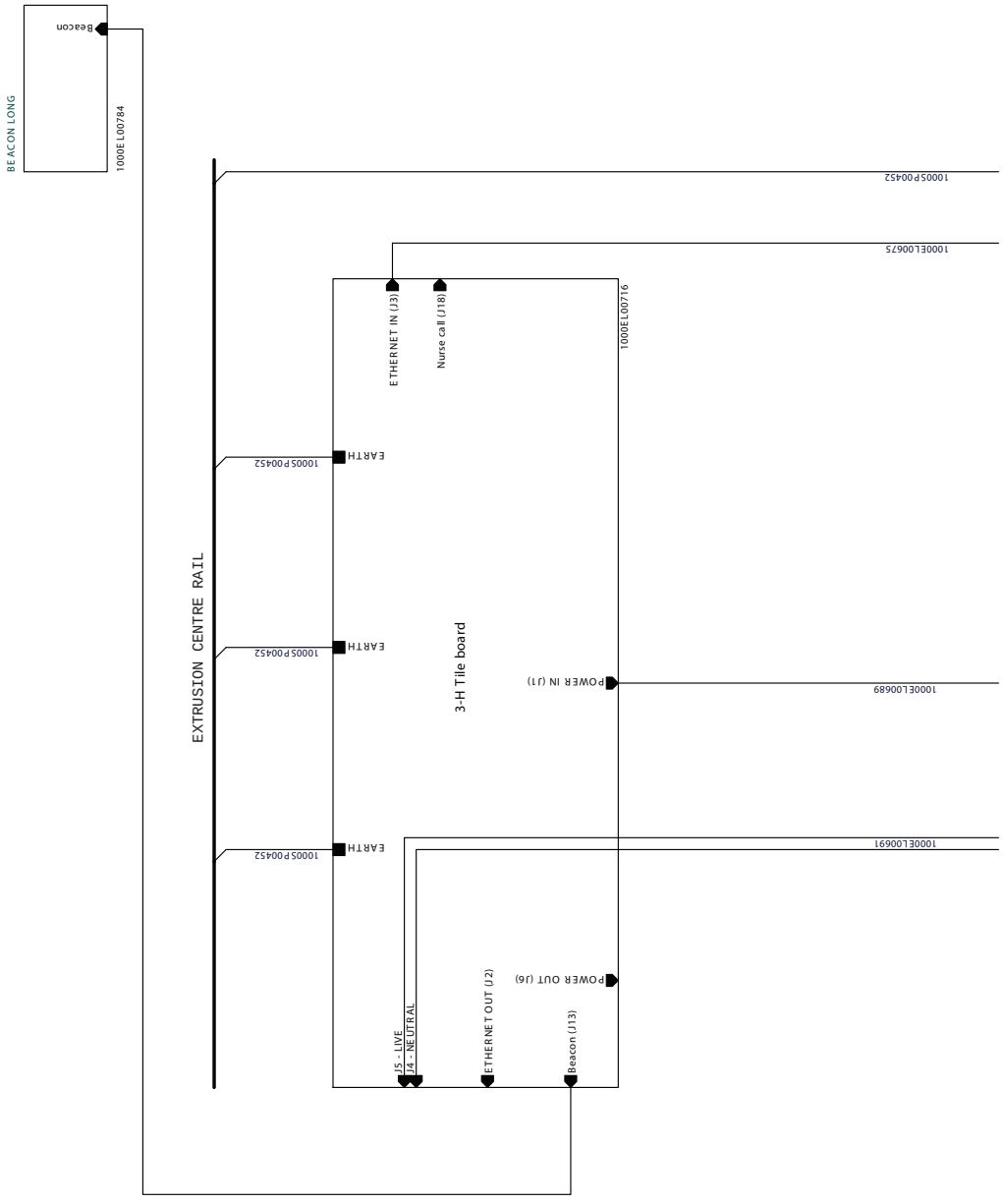
2 Vertical Module



NOTES:
In systems larger than a 3XX, connect cable 1000EL00674 to J7 of the 2V Module

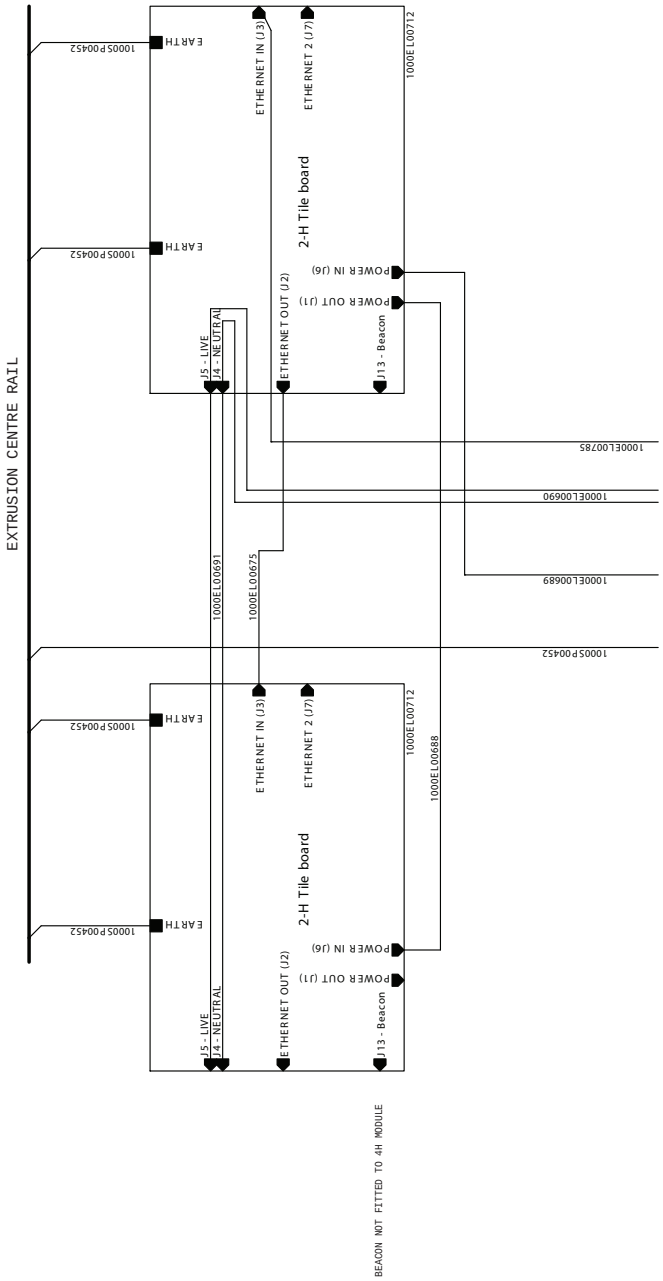
Cabling Diagrams (continued)

3 Horizontal Module



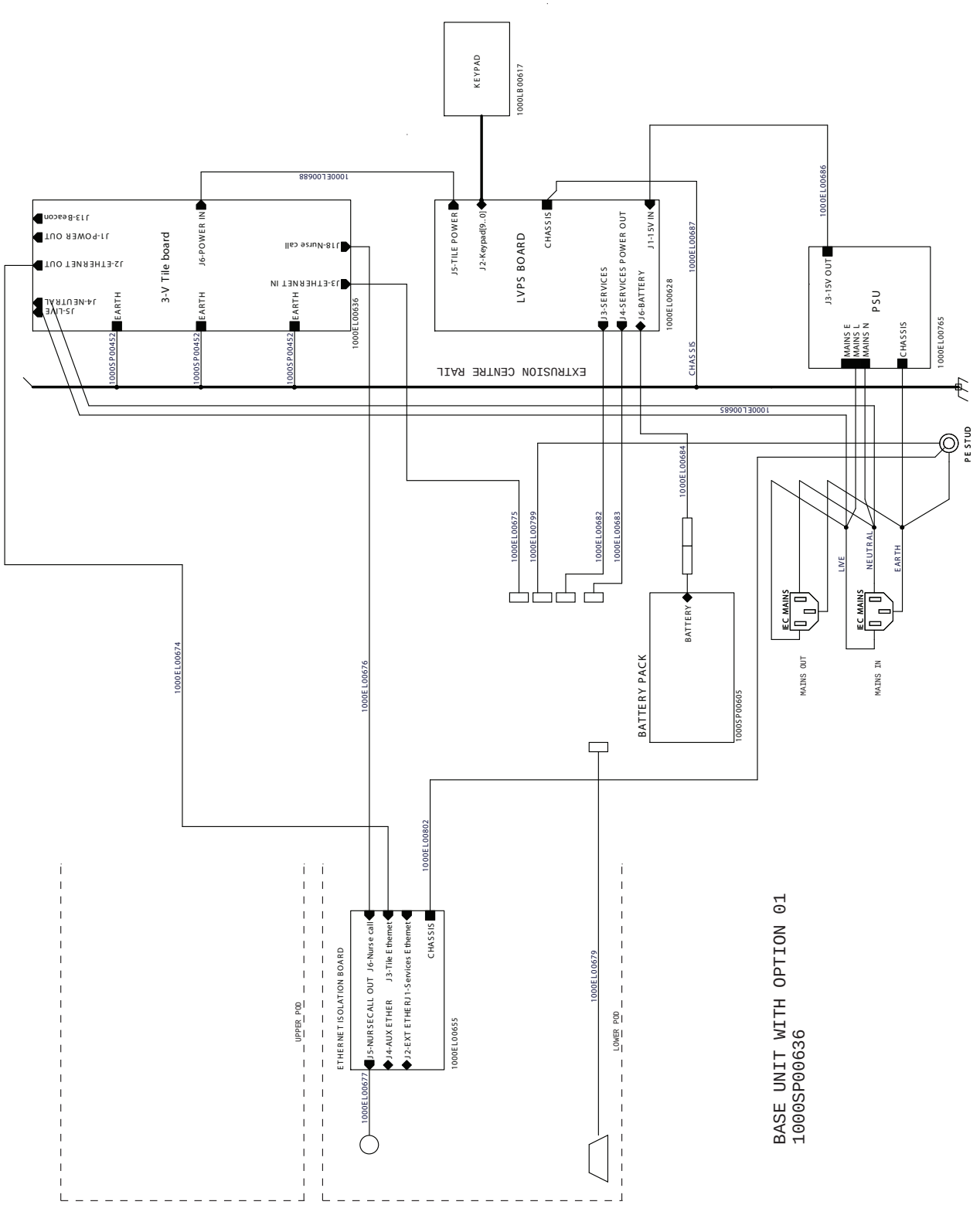
Cabling Diagrams (continued)

4 Horizontal Module



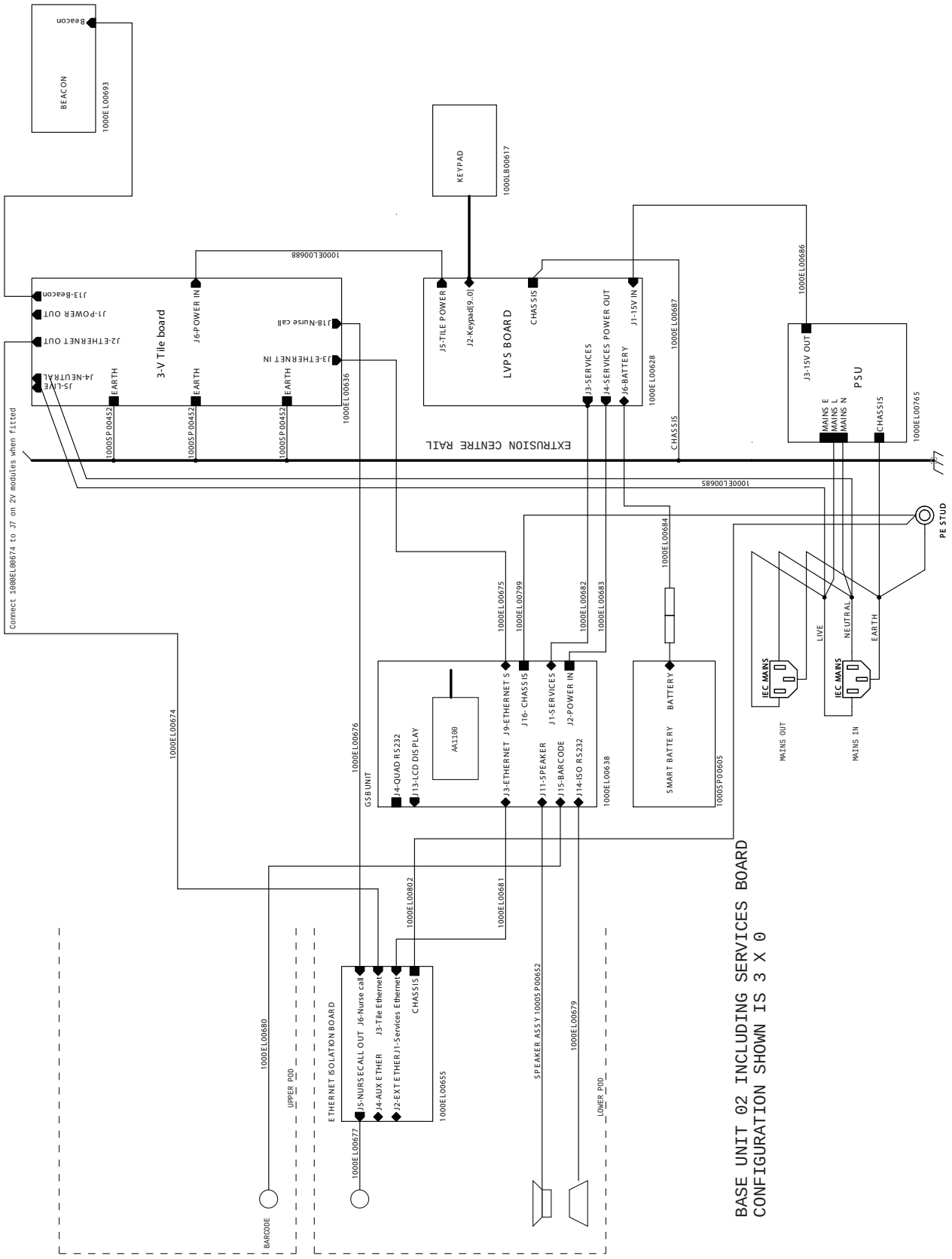
Cabling Diagrams (continued)

Base Unit (option 1)



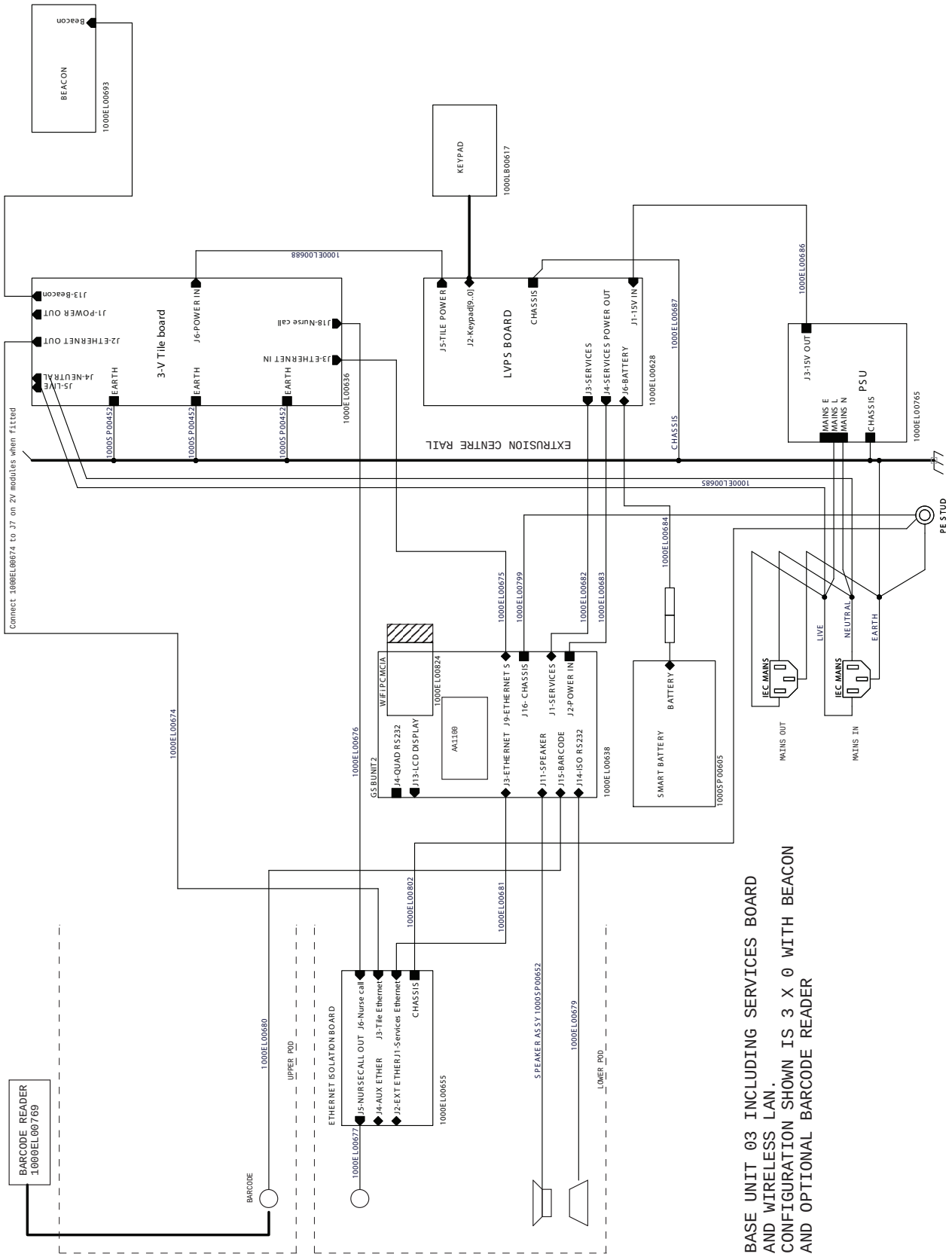
Cabling Diagrams (continued)

Base Unit (option 2)



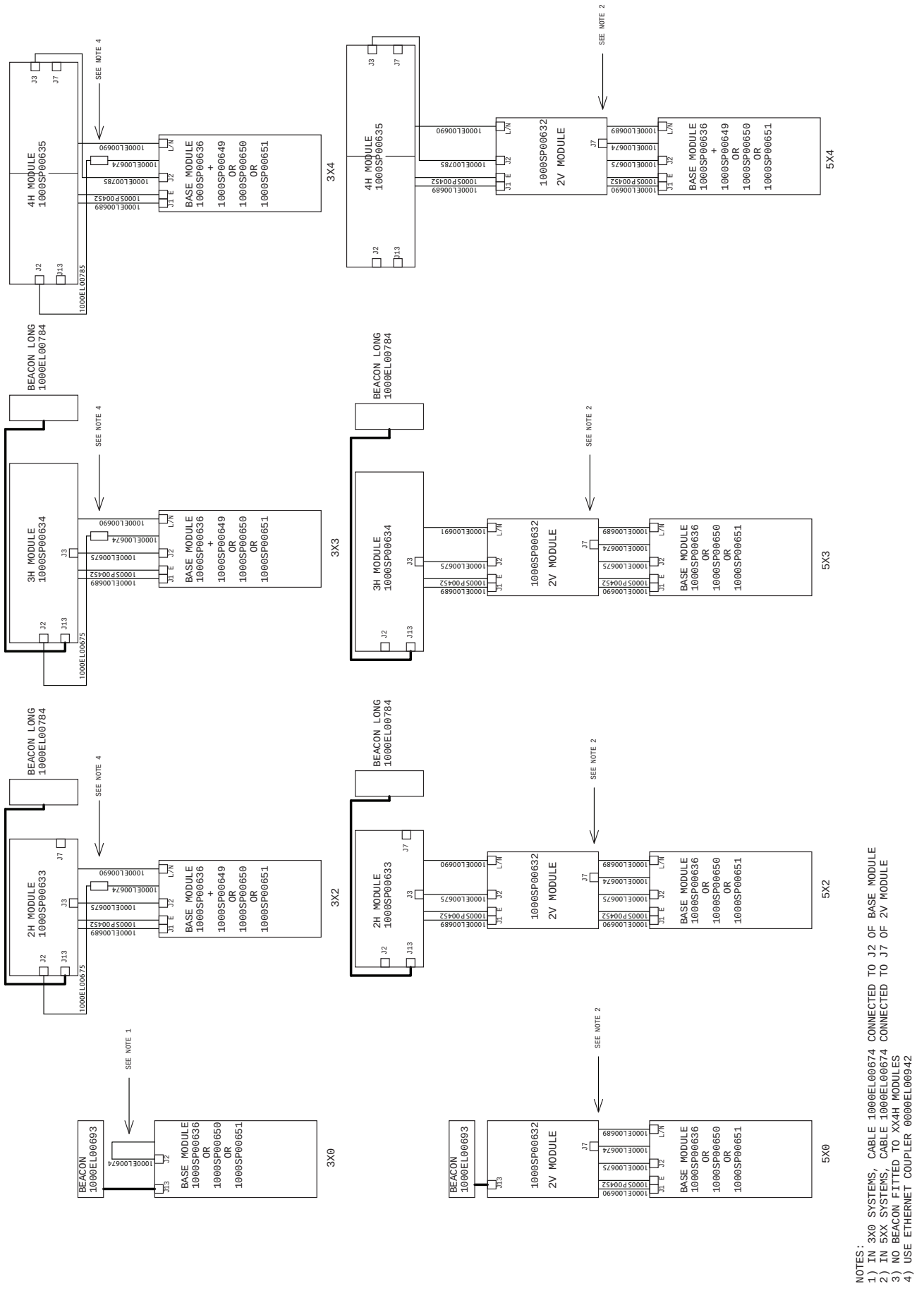
Cabling Diagrams (continued)

Base Unit (option 3)



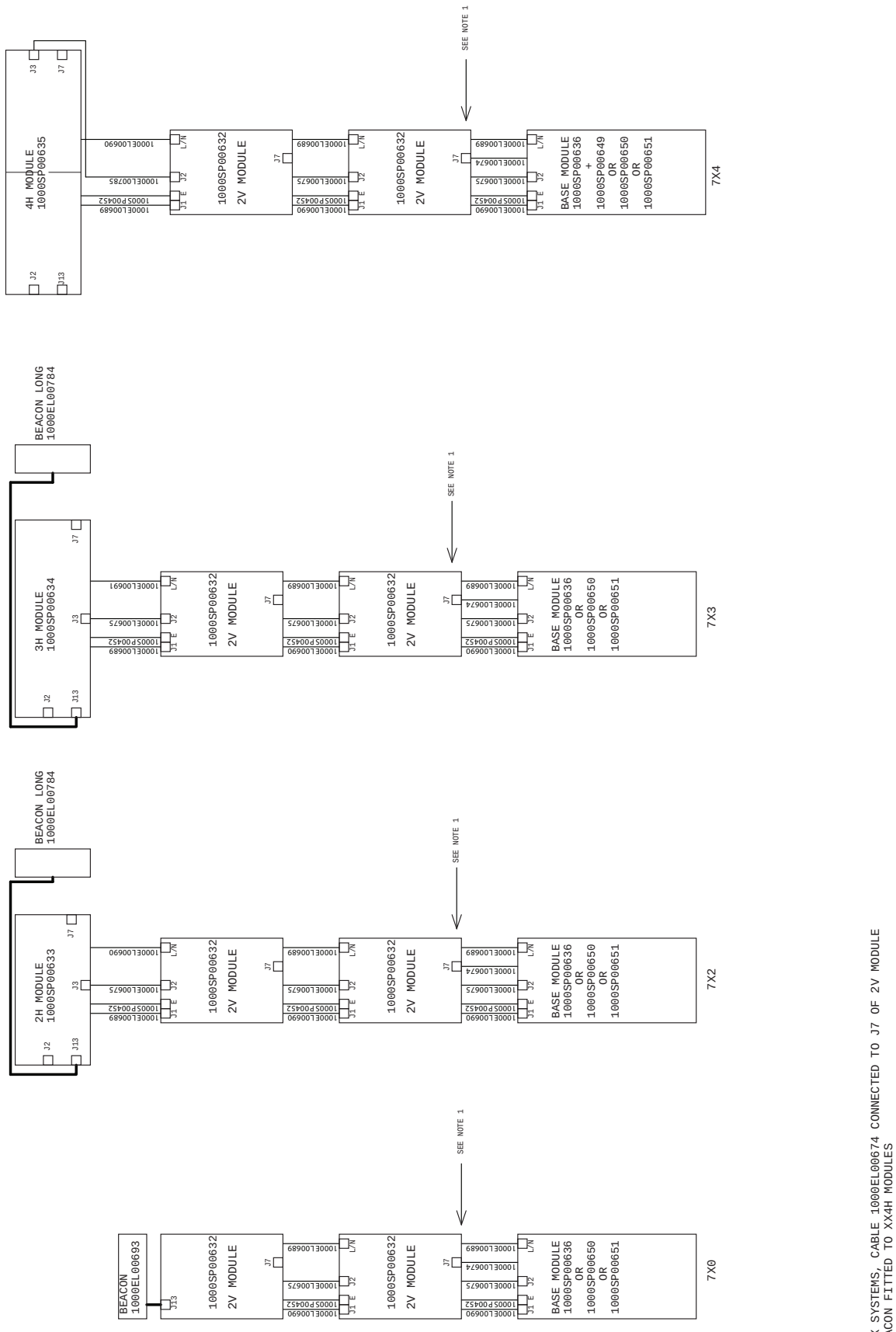
Cabling Diagrams (continued)

Configurations - 3X, 5X



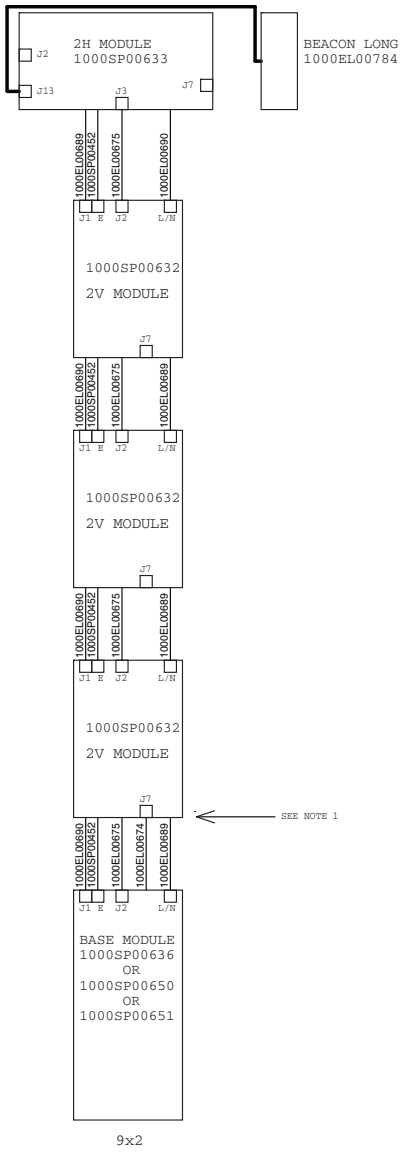
Cabling Diagrams (continued)

Configurations - 7X



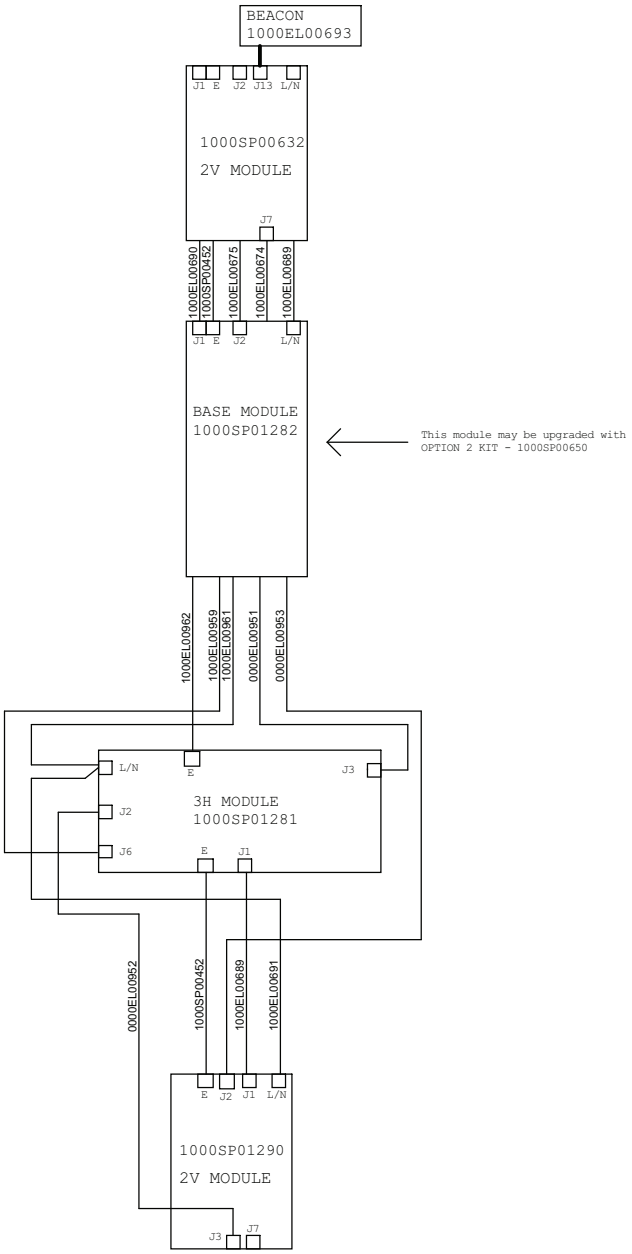
Cabling Diagrams (continued)

Configuration - 9-2

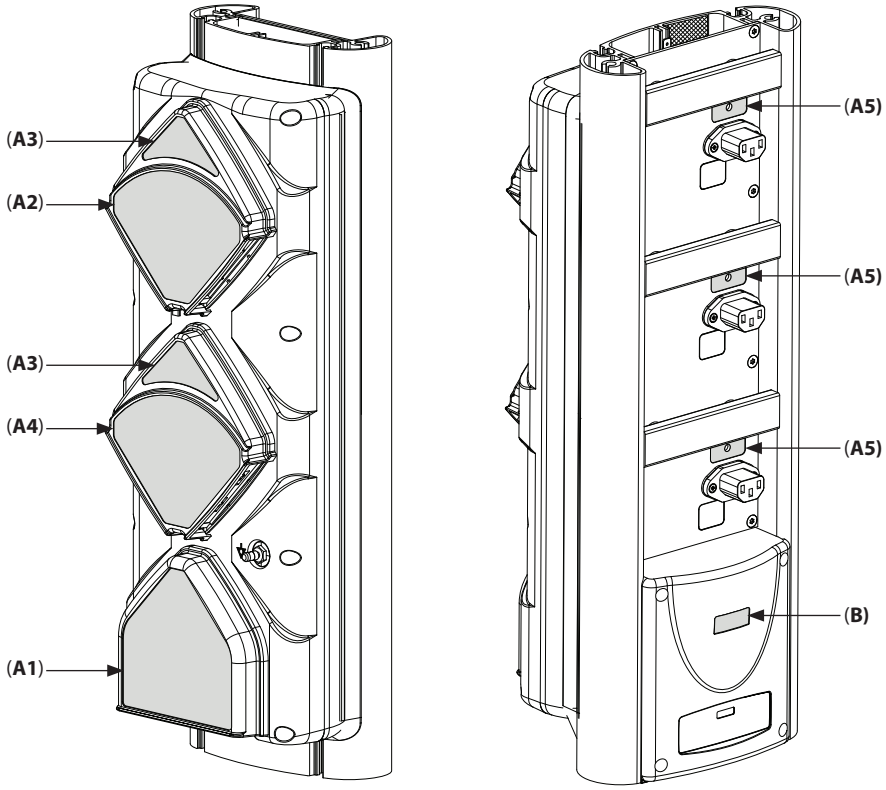


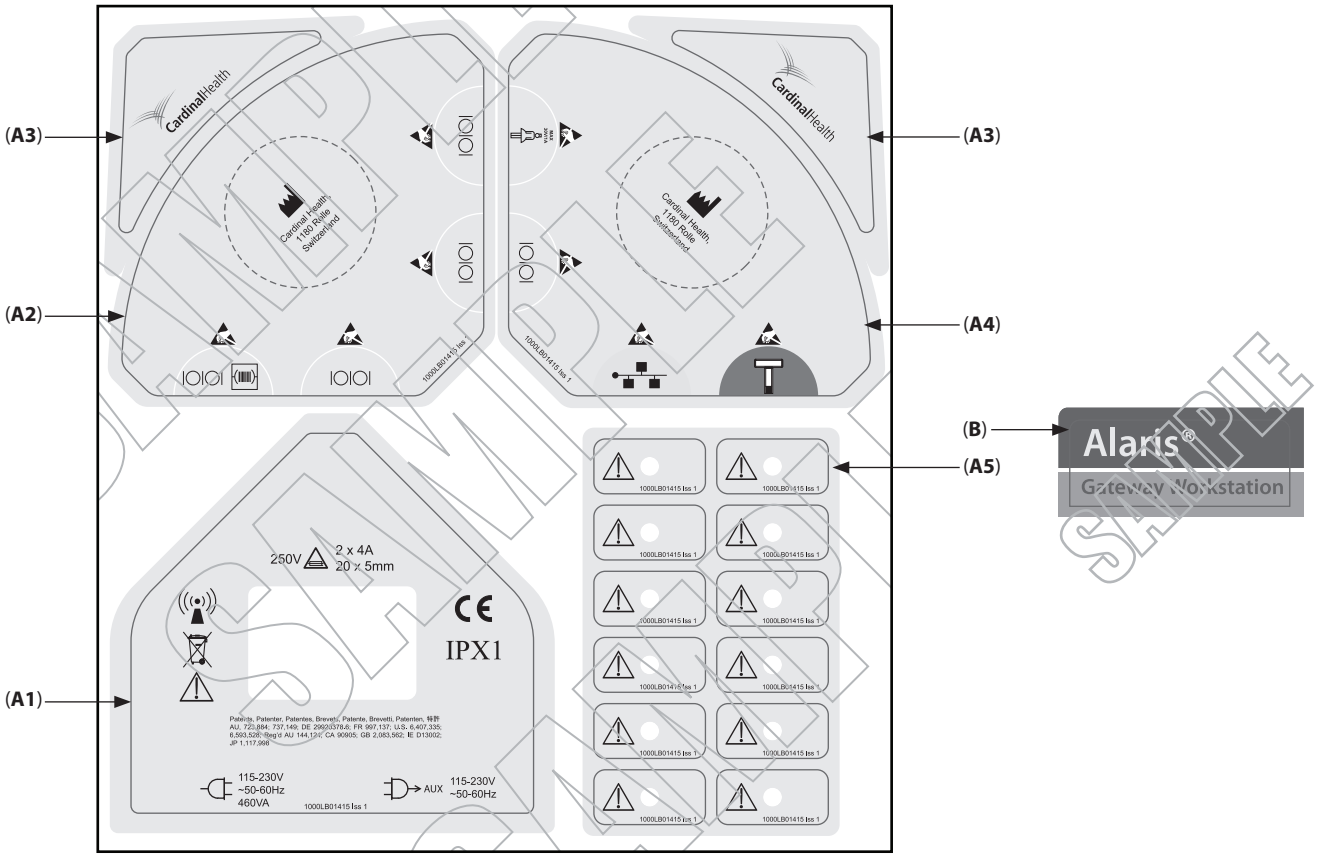
NOTES:
1) CABLE 1000EL00674 CONNECTED TO J7 OF 2V MODULE

Configuration - 2-3-5



Labels





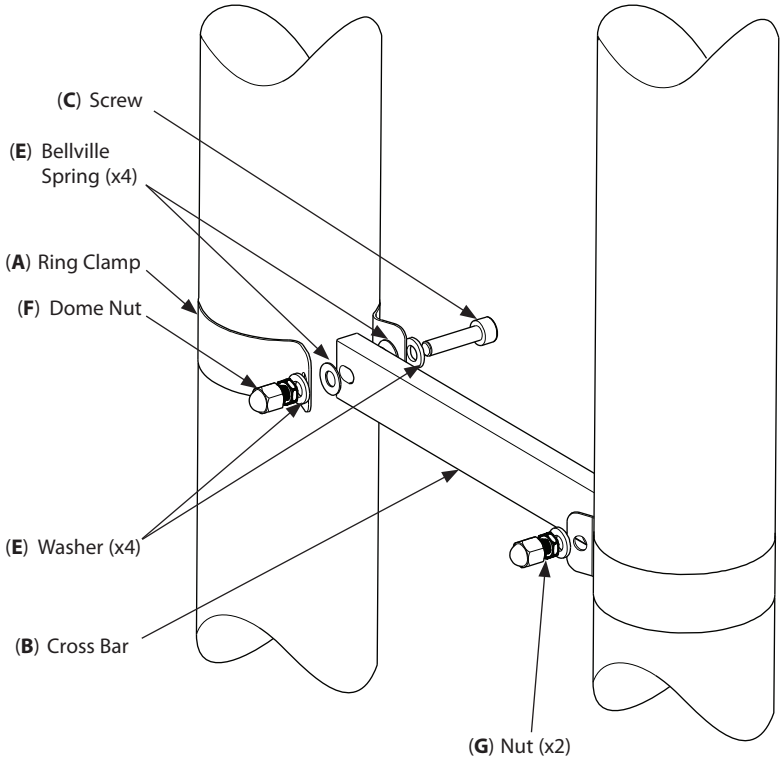
Spare Parts

Item	Description	Part Number
A	LABEL SET ALARIS GATEWAY	1000LB01415
B	LABEL AGW LOGO	1000LB01416

Trolley Mounting Kit

Fitting Procedure

1. Remove the plastic coating from the inner and outer surfaces of the Ring Clamp (A).
2. Slide one ring clamp over each trolley pole.
3. Align the Cross Bar (B) fixing holes with those in each of the Ring Clamps.
4. Insert the Fixing Screw (C) through the assembly positioning washers (D) and (E) as shown.
5. Position the support bar and tighten the Thin Nut (G), Dome Nut (F) and screw to 3Nm.



Spare Parts

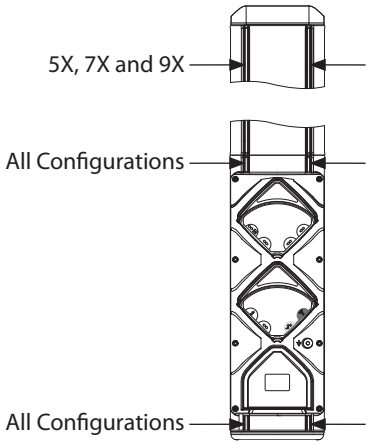
Item	Description	Part Number
A	RING CLAMP	1000SP01187
B	CROSS BAR	"
C	SCREW SKT TAP M6 X 25 DIN 912	"
D	WASHER PLAIN M6 DIN 125	"
E	BELLVILLE WASHER, LEE SPRINGS 250-025-500	"
F	NUT DOME M6 DIN 1587	"
G	THIN NUT	"

Trolley Mounting Kit (continued)

Fitting the Workstation to a trolley

1. When fixing the Workstation to the trolley, the mounting kits should be positioned and tightened so that the mount clamps align with the 10 x 25mm bars on the trolley.
2. The Workstation should then be mounted so both top and bottom mount clamps fit over the 10 x 25mm bars on the trolley.
3. The knobs should be tightened in order to fully restrain the Workstation into position.

Note: The mounting locations for the Workstation must be positioned as shown dependant on the configuration.

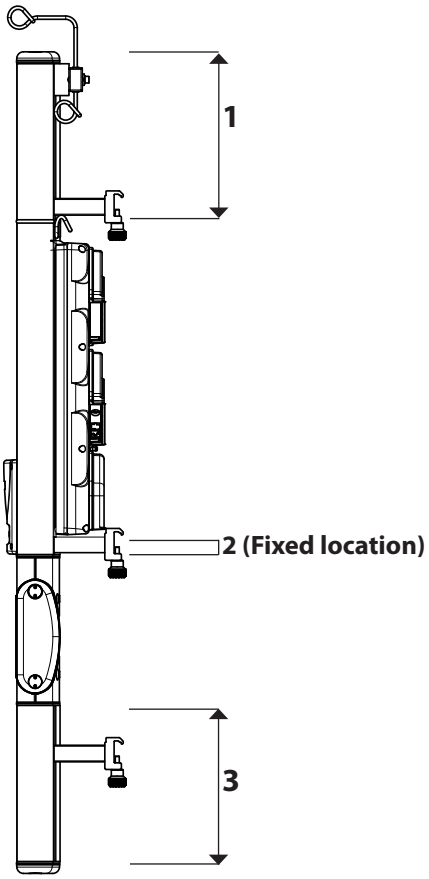


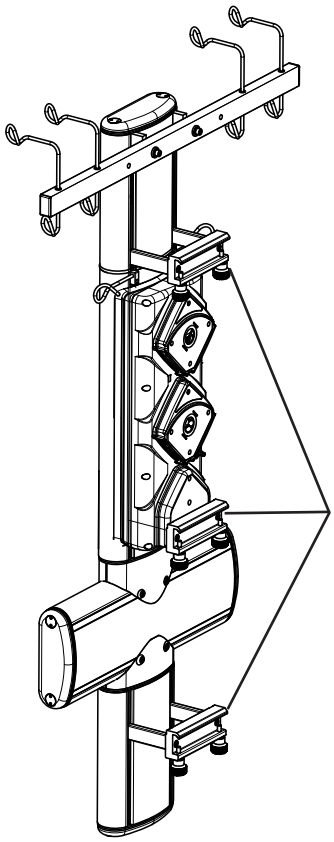
Mounting Locations

Fitting the Workstation configuration 2x3x5 to a trolley

Configurations where volumetric pumps are not located at the top require three separate rail clamps

Points 1,2 and 3 must always be located within the area shown below.



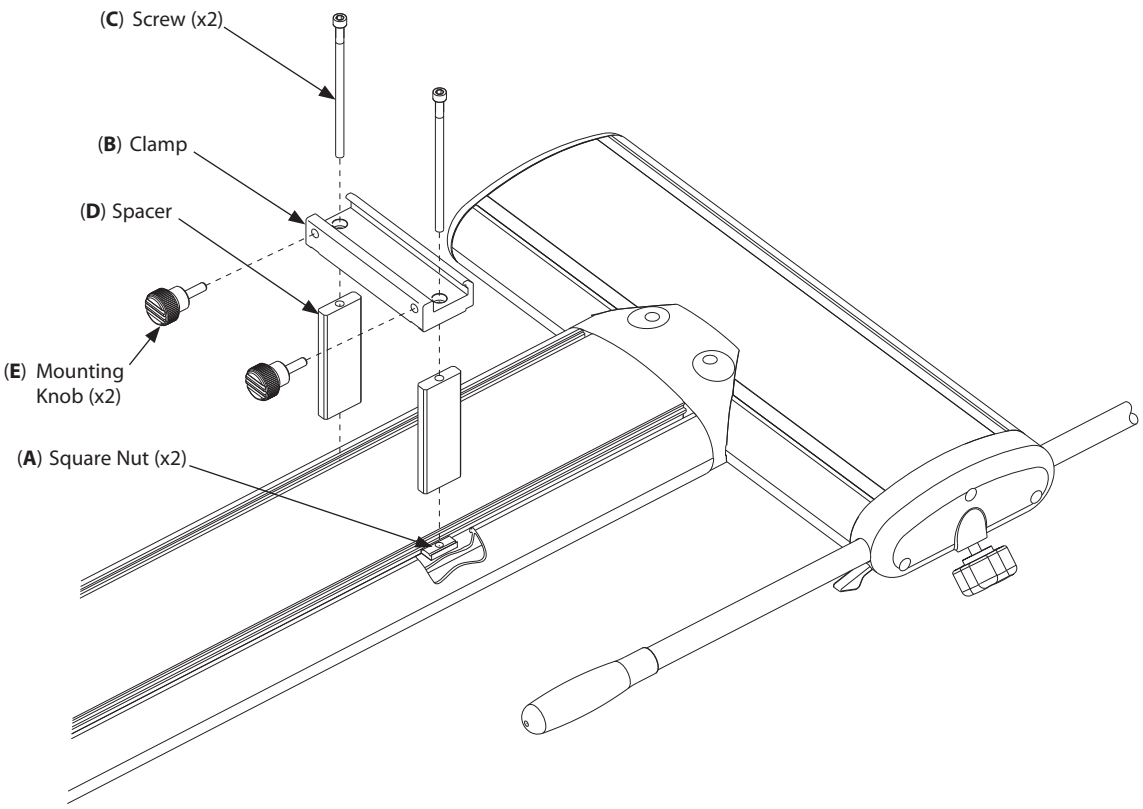


Bar Mounting Kit

Fitting Procedure

1. Remove Sealing Cord from the channel. Using an Allen key, remove the fasteners from the pre-fitted Square Nuts (A) in the extrusion channel. Using a screwdriver or similar pointed tool, slide the loosened Square Nuts along the channel to the required position.
2. Insert the two Screws (C) through the Clamp (B) and Spacers (D).
3. Tighten the Screws ensuring that the mounting kit remains level.
4. Insert the Mounting Knobs (E) into the Clamp.
5. Repeat the process for the second kit.
6. Cut a length of Sealing Cord to fill the channel between the mounting kit and the end caps.
7. Carefully press the cord into place.
8. Repeat the operation for the remaining sections of the channel.

NOTE: C.H.A.P. only recommend mounting kits to be fitted to the vertical extrusion.



See Trolley Mounting Kit section for mounting location instructions.

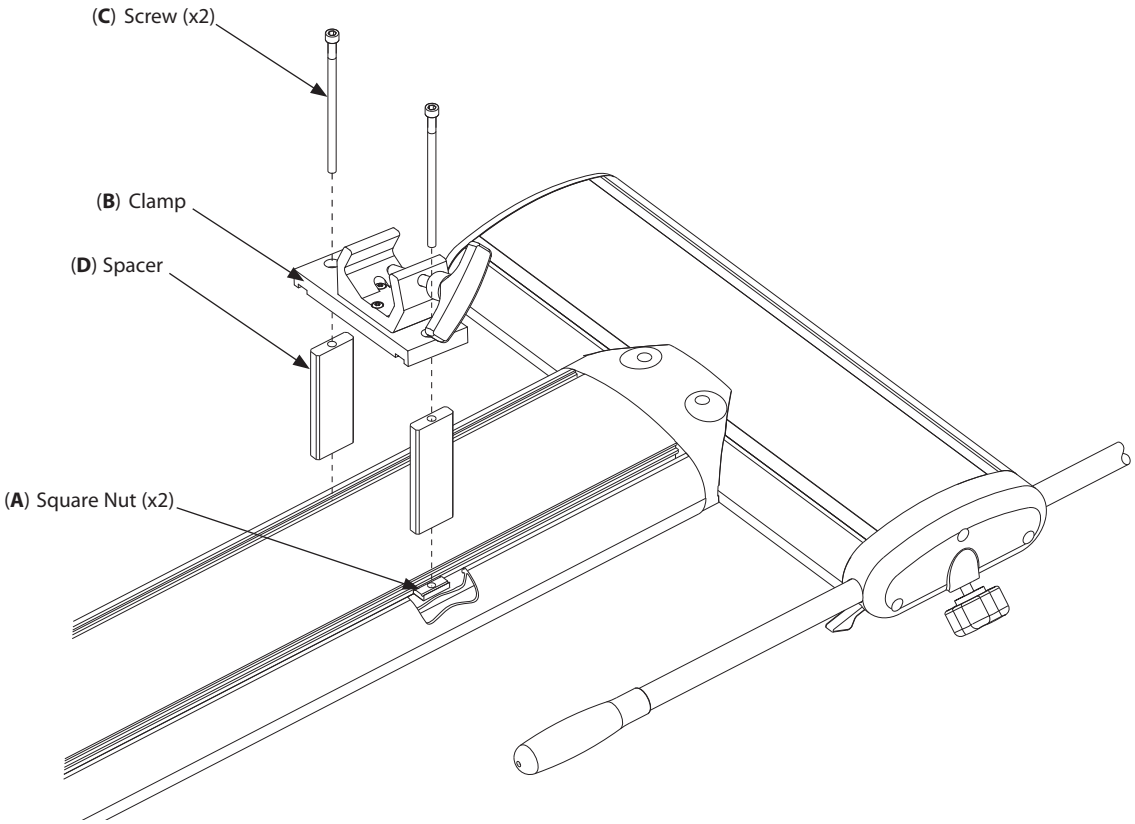
Spare Parts

Item	Description	Part Number
A	NUT SQUARE M6 DS	0000ME00432
B	GATEWAY MOUNTING KIT EXTENDED TYPE 1	1000SP00655
C	SCREW SKT HEAD CAP M6x100 A2 ISO4762	"
D	SPACER, MOUNTING AGW	"
E	KNOB MOUNTING	"

Pole Mounting Kit

Fitting Procedure

1. Remove Sealing Cord from the channel. Using an Allen key, remove the fasteners from the pre-fitted Square Nuts (A) in the extrusion channel. Using a screwdriver or similar pointed tool, slide the loosened Square Nuts along the channel to the required position.
2. Insert the two Screws (C) through the Clamp (B) and Spacers (D).
3. Tighten the Screws ensuring that the mounting kit remains level.
4. Insert the Mounting Knobs (E) into the Clamp.
5. Repeat the process for the second kit.
6. Cut a length of Sealing Cord to fill the channel between the mounting kit and the end caps.
7. Carefully press the cord into place.
8. Repeat the operation for the remaining sections of the channel.



See Trolley Mounting Kit section for mounting location instructions.

Spare Parts

Item	Description	Part Number
A	NUT SQUARE M6 DS	0000ME00432
B	POLE CLAMP MOUNTING ASSEMBLY NARROW	1000SP00169
C	SCREW SKT HEAD CAP M6x100 A2 ISO4762	*
D	SPACER, MOUNTING LONG	*

* Not available separately only as part of the Gateway Mounting Kit Extended Type 1 (1000SP00655). When replacing the bar mounting kit with the pole clamp mounting kit the spacers and screws already fitted should be used where possible.

Appendix A

Electromagnetic Compatibility

Electromagnetic Compatibility

Warning:

- The use of any accessory, transducer, or cable with the Workstation other than those specified may result in increased emissions or decreased immunity of the Workstation.
- The Workstation should not be used adjacent to or stacked with other equipment, however if adjacent or stacked use is necessary, the Workstation should be observed to verify normal operation in the configuration in which it will be used.

Caution:

- The Workstation is a CISPR 11 Group 1 Class A Medical Equipment System and intended for use by healthcare professionals only.
- Medical Electrical Equipment needs special precautions regarding EMC and needs to be installed, put into service and used according to the EMC information provided in the accompanying documents.
- Portable and Mobile RF communications can affect Medical Electrical Equipment.
- Operating the Workstation near equipment which radiates high energy radio frequencies (electro surgical or cauterizing equipment, portable radios, cellular telephones, etc.) may cause false alarm conditions. If this happens, reposition the Workstation away from the source of interference or turn off the Workstation and manually regulate the flow.

<table>
<tr><th colspan="3">Guidance and Manufacturer's Declaration – Electromagnetic Emissions</th></tr>
<tr><td colspan="3">The Workstation is intended for use in the electromagnetic environment specified below.
The customer or the user of the Workstation should assure that it is used in such an environment.</td></tr>
<tr><th>Emissions Test</th><th>Compliance</th><th>Electromagnetic Environment – Guidance</th></tr>
<tr><td>CISPR 11
RF Emissions</td><td>Group 1</td><td>The Workstation uses RF energy only for its internal function in the normal product offering. Therefore, its RF emissions are very low and are not likely to cause any interface in nearby electronic equipment.</td></tr>
<tr><td>CISPR 11
RF Emissions</td><td>Class A system when used in conjunction with pumps
Class B in stand alone operation</td><td rowspan="3">The Workstation is suitable for use in all establishments, other than domestic, and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.</td></tr>
<tr><td>EN 61000-3-2
Harmonic Emissions</td><td>Class A</td></tr>
<tr><td>EN 61000-3-3
Voltage Fluctuations, Flicker Emissions</td><td>Complies</td></tr>
</table>

Guidance and Manufacturer's Declaration - Electromagnetic Immunity			
The Workstation is intended for use in the electromagnetic environment specified below. The customer or the user of Workstation should assure that it is used in such an environment.			
Immunity Test	**EN 60601-1-2 Test Level**	**Compliance Level**	**Electromagnetic Environment – Guidance**
EN 61000-4-2 Electro-Static Discharge (ESD)	±6 kV contact ±8 kV air	±8 kV contact (Note 2) ±15 kV air (Note 2)	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
EN 61000-4-4 Electrical Fast Transient, Burst (EFT) (Note 3)	±2 kV for power supply lines ±1 kV for input/ output lines	±2 kV for power supply lines N/A (Note 4)	Mains power quality should be that of a typical commercial or hospital environment.
EN 61000-4-5 Power Line Surge (Note 3)	±1 kV Line(s) to Line(s) ±2 kV Line(s) to Earth	±1 kV Line(s) to Line(s) ±2 kV Line(s) to Earth	Mains power quality should be that of a typical commercial or hospital environment.
EN 61000-4-8 Power Frequency Magnetic Field (50/60 Hz)	3 A/m	400 A/m 50 Hz (Note 2)	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
EN 61000-4-11 Voltage Dips, Short Interruptions, and Voltage Variations (Note 3)	<5 % *U*T (Note 1) (>95 % dip in *U*T) for 0.5 cycle	<5 % *U*T (>95 % dip in *U*T) for 0.5 cycle	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Workstation requires continued operation during power mains interruptions, it is recommended that the Workstation be powered from an uninterruptible power supply or a battery. The Workstation does employ an internal short duration battery.
	40 % *U*T (60 % dip in *U*T) for 5 cycles	40 % *U*T (60 % dip in *U*T) for 5 cycles	
	70 % *U*T (30 % dip in *U*T) for 25 cycles	70 % *U*T (30 % dip in *U*T) for 25 cycles	
	<5 % *U*T (>95 % dip in *U*T) for 5 sec	<5 % *U*T (>95 % dip in *U*T) for 5 sec	

Note 1—U_T is the AC mains voltage prior to application of the test level.
Note 2—Compliance levels raised by EN 60601-2-24.
Note 3—Performed at the Minimum and Maximum Rated Input Voltage.
Note 4—Cardinal Health recommends using signal cables of less than 3 meters in length and this requirement is applicable only if signal cables are 3 meters or more in length. (EN 60601-1-2:2002, Clause 36.202.4)

Guidance and Manufacturer's Declaration—Electromagnetic Immunity
LIFE SUPPORT Equipment

The Workstation is intended for use in the electromagnetic environment specified below.
The customer or the user of the Workstation should ensure that it is used in such an environment.

Immunity Test	EN 60601-1-2 Test Level	Compliance Level	Electromagnetic Environment – Guidance
EN 61000-4-6 Conducted RF	3 V rms 150 kHz to 80 MHz	10 V rms (Note 3)	Portable and mobile RF communications equipment should be used no closer to any part of the Workstation, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended Separation Distance** $d = \left[\frac{3.5}{V_1}\right]\sqrt{P}$
EN 61000-4-3 Radiated RF	3 V/m 80 MHz to 2.5 GHz	10 V/m (Note 3)	$d = \left[\frac{12}{V_2}\right]\sqrt{P}$ 80 MHz to 800 MHz $d = \left[\frac{12}{E_1}\right]\sqrt{P}$ 80 MHz to 2.5 GHz $d = \left[\frac{23}{E_1}\right]\sqrt{P}$ 800 MHz to 2.5 GHz where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and *d* is the recommended separation distance in meters (m).[a] Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, [b] should be less than the compliance level in each frequency range. [c] Interference may occur in the vicinity of equipment marked with the following symbol:

Note 1—At 80 MHz and 800 MHz, the higher frequency range applies.
Note 2—These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.
Note 3—Compliance levels raised by EN 60601-2-24.

[a] The compliance levels in the ISM frequency bands between 150 kHz and 80 MHz and in the frequency range 80 MHz to 2.5 GHz are intended to decrease the likelihood that mobile/portable communications equipment could cause interference if it is inadvertently brought into patient areas. For this reason, an additional factor of 10/3 is used in calculating the recommended separation distance for transmitters in these frequency ranges.
[b] Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast, and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the Workstation is used exceeds the applicable RF compliance level above, the Workstation should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the Workstation.
[c] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 10 V/m.

Recommended Separation Distances for LIFE SUPPORT Equipment between portable and mobile RF communications equipment and the Alaris® Gateway Workstation

The Workstation is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled.
The user of the Workstation can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Workstation as recommended below, according to the maximum output power of the communications equipment.

Rated Maximum Output Power of Transmitter W	**Separation Distance According to Frequency of Transmitter** m			
	150 kHz to 80 MHz Outside ISM bands 3.5 $d = [\text{------}]\sqrt{P}$ V_1	**150 kHz to 80 MHz In ISM bands** 12 $d = [\text{------}]\sqrt{P}$ V_2	**80 MHz to 800 MHz** 12 $d = [\text{------}]\sqrt{P}$ E_1	**800 MHz to 2.5 GHz** 23 $d = [\text{------}]\sqrt{P}$ E_1
0.01	0.03	0.12	0.12	0.23
0.1	0.11	0.38	0.38	0.73
1	0.35	1.20	1.20	2.30
10	1.11	3.80	3.80	7.28
100	3.50	12.00	12.00	23.00

For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in meters (m) can be determined using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

Note 1—At 80 MHz and 800 MHz, the separation distance for the higher frequency range apply.
Note 2—The ISM (Industrial, Scientific, and Medical) bands between 150 kHz and 80 MHz are 6.765 MHz to 6.795 MHz; 13.553 MHz to 13.567 MHz; 26.957 MHz to 27.283 MHz; and 40.66 MHz to 40.70 MHz.
Note 3—An additional factor of 10/3 is used in calculating the recommended separation distance for transmitters in the ISM frequency bands between 150 kHz and 80 MHz and in the frequency range 80 MHz to 2.5 GHz to decrease the likelihood that mobile/portable communications equipment could cause interference if it is inadvertently brought into patient areas.
Note 4—These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

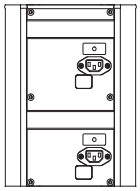
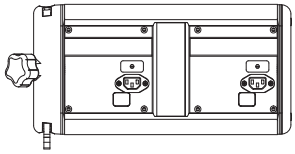
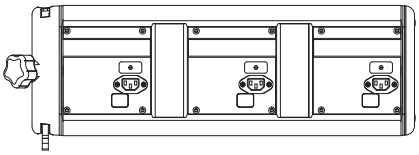
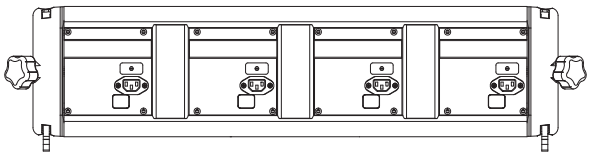
Appendix B

Spare Parts Listing

In this appendix

Module Assemblies	57
Cables	58
Rear Cover	58
Saddle Kit	58
Pod Kit	58
Front Cover Kit	59
LVPS Board	59
PSU Kit	59
Battery Pack	59
Tile Assemblies	59
Ethernet Isolation Board	59
Labels	59
Hardware Kit	60
Miscellaneous Hardware	60
Trolley Mounting Kit	60
Bar Mounting Kit	61
Pole Mounting Kit	61
End Covers/Tile Spacers	61
Beacon Horizontal	61
Beacon Vertical	61

Module Assemblies

Module	Description	Part Number
	Option 2 Upgrade Kit	1000SP00650
	Option 3 Upgrade Kit (for option 2 only) Wireless LAN Card	1000EL00824
	Barcode Reader Spares Kit	1000SP00651
	**2 High Vertical Module Assembly**	1000SP00632
	**2 Wide Horizontal Module Assembly**	1000SP00633
	**3 Wide Horizontal Module Assembly**	1000SP00634
	**4 Wide Horizontal Module Assembly**	1000SP00635

Cables

Part Number	Description	Qty
1000EL00802	Assembly Cable Earth Ethernet Isolation	1 Ea
1000EL00799	Assembly Cable Earth Services Board	1 Ea
1000SP00452	Assy Cable Earth DS/IDS	3 Ea
0000EL00943	Ethernet Cable 2m	1 Ea
1000EL00684	Gateway Cable Assy Battery LVPS	1 Ea
1000EL00677	Gateway Cable Assy Isolated Nurse Call	1 Ea
1000EL00679	Gateway Cable Assy Isolated RS232	1 Ea
1000EL00687	Gateway Cable Assy LVPS Chassis	1 Ea
1000EL00688	Gateway Cable Assy LVPS Tile Power	1 Ea
1000EL00685	Gateway Cable Assy Mains In	1 Ea
1000EL00676	Gateway Cable Assy Nurse Call	1 Ea
1000EL00686	Gateway Cable Assy PSU LVPS Power	1 Ea
1000EL00681	Gateway Cable Assy Services Ethernet	1 Ea
1000EL00682	Gateway Cable Assy Services LVPS	1 Ea
1000EL00683	Gateway Cable Assy Services Power	1 Ea
1000EL00675	Gateway Cable Assy Tile Ethernet In	1 Ea
1000EL00674	Gateway Cable Assy Tile Ethernet Out	1 Ea

Rear Cover

Part Number	Description	Qty
1000ME00595	Cover Rear Asena Gateway	1 Ea

Saddle Kit

Part Number	Description	Qty
1000SP01213	**AGW SADDLE KIT**	
	Saddle Gasket Asena Gateway	1 Ea
	Saddle Rear Cover Asena Gateway	1 Ea
	Seal Comms Chimney AGW	1 Ea
	Seal Cover Rear Asena Gateway	1 Ea
	Seal PSU Chimney AGW	1 Ea

Pod Kit

Part Number	Description	Qty
1000SP01214	**AGW POD KIT**	
	Label Set Alaris Gateway	1 Ea
	Pod Comms Asena Gateway	2 Ea
	Pod IEC Asena Gateway	1 Ea
	Seal Comms Pod Asena Gateway	2 Ea
	Seal IEC Pod Asena Gateway	1 Ea

Front Cover Kit

Part Number	Description	Qty
1000SP01215	**AGW FRONT COVER KIT**	
	Cover Front AGW	1 Ea
	Gateway Keypad Label	1 Ea
	Label AGW Logo	1 Ea
	Seal Front Cover AGW	1 Ea

LVPS Board

Part Number	Description	Qty
1000EL00628	Assembly PCB LVPS	1 Ea

PSU Kit

Part Number	Description	Qty
1000SP01216	**AGW PSU KIT**	
	Assembly PSU Switch Mode	1 Ea
	Thermal Pad PSU	1 Ea

Battery Pack

Part Number	Description	Qty
1000SP00605	Gateway Assembly Battery Pack	1 Ea

Tile Assemblies

Part Number	Description	Qty
1000SP00598	Assy Tile Plate 2 High Asena Gateway	1 Ea
1000SP00596	Assy Tile Plate 2 Wide Asena Gateway	1 Ea
1000SP00599	Assy Tile Plate 3 High Asena Gateway	1 Ea
1000SP00597	Assy Tile Plate 3 Wide Asena Gateway	1 Ea

Ethernet Isolation Board

Part Number	Description	Qty
1000EL00655	Asena Gateway Ethernet Isolation Board	1 Ea

Labels

Part Number	Description	Qty
1000LB01415	Label Set Alaris Gateway	1 Ea
1000LB01416	Label AGW Logo	1 Ea

Hardware Kit

Part Number	Description	Qty
1000SP01217	**AGW HARDWARE KIT**	
	Flat Washer Nylon M3 to ISO7089	20 Ea
	M4x10 Csk Torx Hd A2 BN13278	20 Ea
	Screw Skt Cap M6x20 DIN 6912	20 Ea
	M3x16 Pan Hd Torx A2 ISO14583	20 Ea
	M3x8 Pan Hd Torx A2 ISO14583	20 Ea
	M4x20 Pan Hd Torx A2 BN5653	20 Ea
	M4x10 Pan Head BIN 5653	20 Ea
	M4x8 Pan Hd Torx A2 BN5653	20 Ea
	Star Washer M4 DIN6797	20 Ea
	Washer M3 Plain Z+C	20 Ea
	Washer M3 Wavey SST	20 Ea
	Offset Faston Tab M4 Tinned	10 Ea
	Nut M6 Square DS/IDS	20 Ea
	Washer M3 Shakeproof External	20 Ea
	Washer M6 Plain	20 Ea
	Nut M6 Thin 4035 A2	20 Ea
	Washer M6 Shakeproof DIN 67898,A2	20 Ea
	Nut M6 Plain DIN 934 A2	20 Ea
	Washer Earth M6	20 Ea
	Screwlock Kit Female RS232	3 Ea

Miscellaneous Hardware

Part Number	Description	Qty
0000ME00444	Asena GW, Assy, Cover Dust RS232	1 Ea
1000ME00561	Hard Stop Module Spacer Asena Gateway	1 Ea
0000ME00547	PE Stud M6x20	1 Ea
1000ME00562	Shoulder Nut Asena Gateway	1 Ea
1000SP00657	Tube Tidy Kit	1 Ea
1000SP00643	Tie Rod Assy Kit 30	1 Ea
1000SP00644	Tie Rod Assy Kit 50	1 Ea
1000SP00645	Tie Rod Assy Kit 70	1 Ea
1000SP00646	Tie Rod Assy Kit 3H	1 Ea
1000SP00647	Tie Rod Assy Kit 5H	1 Ea
1000SP00648	Tie Rod Assy Kit 7H	1 Ea

Trolley Mounting Kit

Part Number	Description	Qty
1000SP01187	**MOUNTING KIT ASSEMBLY DS TROLLEY**	
	Belville Washer, Lee Springs 250-025-500	4 Ea
	Nut Dome M6 DIN 1587	2 Ea
	Ring Clamp	2 Ea
	Screw Skt Tap M6 X 25 DIN 912	2 Ea
	Washer Plain M6 DIN 125	4 Ea

Bar Mounting Kit

Part Number	Description	Qty
1000SP00655	**ASSEMBLY MOUNTING KIT EXTENDED TYPE 1**	
	Knob Mounting	2 Ea
	Rail Mounting Clamp DS/IDS	1 Ea
	Screw Skt Head Cap M6x100 A2 ISO4762	2 Ea
	Spacer, Mounting Long	2 Ea

Pole Mounting Kit

Part Number	Description	Qty
1000SP00169	**ASSEMBLY P/CLAMP DOCKING STATION ASENA**	
	Plate Mounting P/clamp Dock Stat Asena	1 Ea
	Spacer Pole Clamp Docking Station Asena	2 Ea
	Nut Square M6 Ds	2 Ea
	Screw Skt Cap M6 X 40 St/steel	2 Ea
	Pole Clamp	1 Ea
	Screw M4x16 Din 7985 Zp+p	4 Ea
	Label Logo	1 Ea
	Washer M4 Shakeproof	4 Ea

End Covers/Tile Spacers

Part Number	Description	Qty
1000ME00544	Beacon End Cap Asena Gateway	1 Ea
1000ME00547	Beacon Diffusor	1 Ea
1000ME00545	End Cap Asena Gateway	1 Ea
1000ME00543	End Plate Intermediate Asena Gateway	1 Ea
1000ME00542	Spacer Tile Module Asena Gateway	1 Ea

Beacon Horizontal

Part Number	Description	Qty
1000EL00784	Cable Assembly Beacon Long	1 Ea

Beacon Vertical

Part Number	Description	Qty
1000EL00693	Gateway Cable Assembly Beacon	1 Ea

Appendix C

Disposal

Disposal

Information on Disposal for Users of Waste Electrical & Electronic Equipment

This symbol on the product and/or accompanying documents means that used electrical and electronic products should not be mixed with municipal waste.

If you wish to discard electrical and electronic equipment, please contact your Cardinal Health affiliate office or distributor for further information.

Disposing of this product correctly will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling.

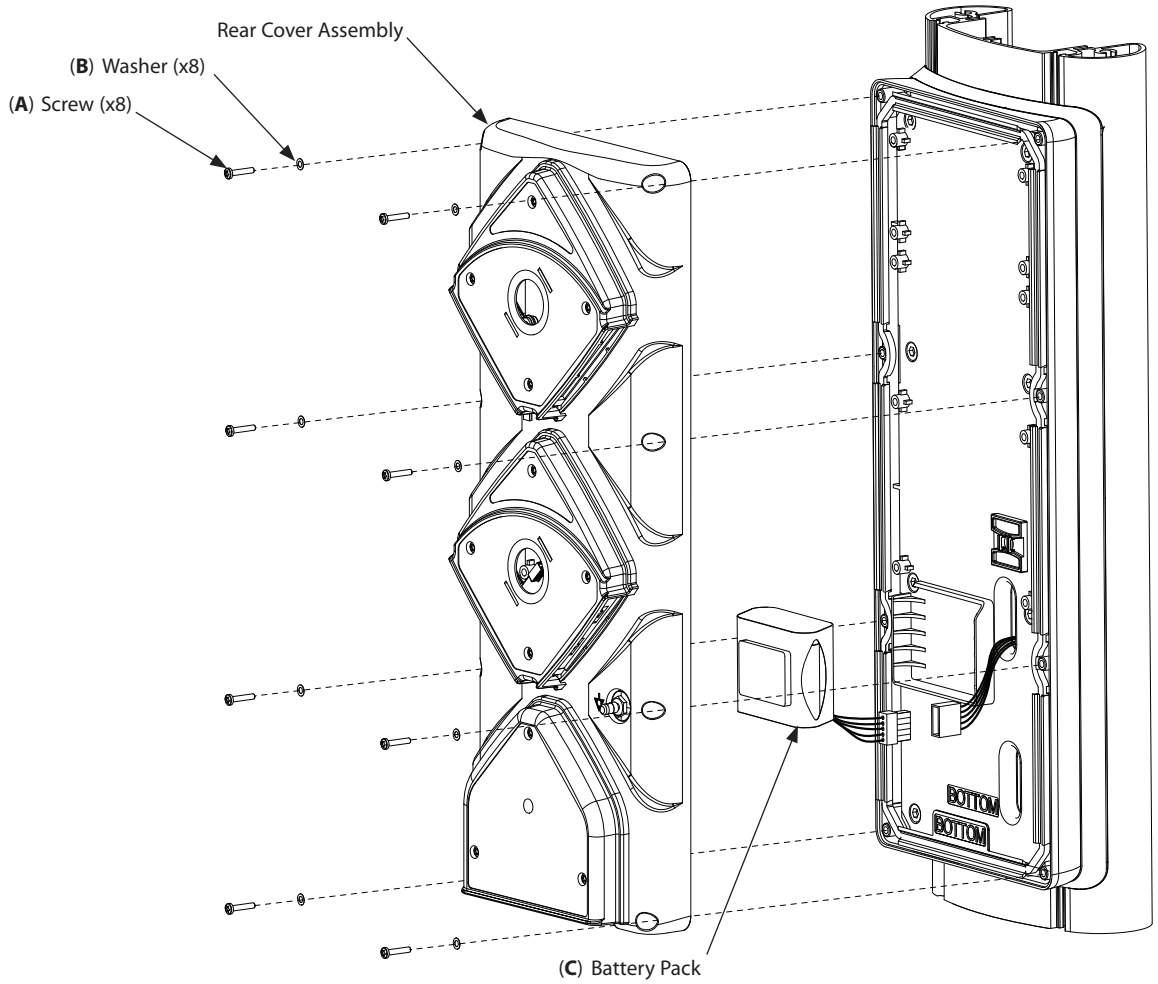
Information on Disposal in Countries outside the European Union

This symbol is only valid in the European Union. The product should be disposed of taking environmental factors into consideration. To ensure no risk or hazard, remove the internal rechargeable battery and the Nickel Metal Hydride battery from the Services Board and dispose of as outlined by the local country regulations. All other components can be safely disposed of as per local regulations.

Battery Removal

Removal Procedure

1. Remove the eight Screws (A) and Washers (B) securing the Rear Cover Assembly to the Power Base Module.
2. Open the Cover Assembly by hinging along one long face. Avoid stressing the connected cables and lay the Cover along side the assembly.
3. Disconnect the Battery (C) and remove from saddle slot.



Appendix D

Service Contacts

Service Contacts

For service, contact your local Affiliate Office or Distributor.

AE

Cardinal Health,
PO Box 5527,
Dubai, United Arab Emirates.
Tel: (971) 4 28 22 842
Fax: (971) 4 28 22 914
www.cardinalhealth.com/international/distributors/alaris

AU

Cardinal Health,
3/167 Prospect Highway,
PO Box 355
Seven Hills, NSW 2147,
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Tel: (61) 2 9838 0255
Fax: (61) 2 9674 4444
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Fax: (32) 2 267 99 21
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CA

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Fax: (1) 905-752-3343
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Appendix E

Document History

Document History

Issue	Date	CO No.	Author	Update Description
1	31/01/06	4974	Martin Burnett	Initial release
2	30/06/06	6994	Martin Burnett	Rebrand
3	November 2006	7237	Ian Tyler	Mounting to trolley instructions added.
4	July 2008	7886	Ian Tyler	Revisions to service procedures and update of spare parts.